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THE IRISH BUILDER

And Engineering Record.

The Year Eighteen Hundred and Seventy.

IT looks like yesterday, and yet a twelvemonth has elapsed since the corresponding page to this of the IRISH BUILDER conveyed our new year's greeting. Another year has passed away and for ever, and with it many a well-remembered face whose position is occupied as the old year's now is by the new. Such is time, and were it not for these mementos and distinctive periods of division, its progress would be undefinable, so rapidly do events and seasons blend into each other. We have now all but imperceptibly entered into a new decade. What changes may be effected in that short period none can tell; yet while we are pursuing our onward path, although we cannot prophesy, it becomes our pleasing duty to record the past. The wigwam of the savage, and the wicker-built mud-plastered palace of a somewhat more advanced age, tell their own tales, although they leave no trace for posterity; but with civilized man there is certainly nothing so suggestive of a nation's improvement or debasement as the architectural features presented of its period. The style of its public buildings, its national monuments, and its domestic edifices become graven in enduring type as history of the manners of the age. From the buried towns of Pompeii and Herculaneum, in the remains of ancient Greece, and those of her imperial mistress, as well as from every country where Roman rule once held sway (the giant power of her legions transplanting thither all the arts and refinements she had acquired from fallen Greece) we have distinctive proof of the habits of the period; and while they evidence either former prosperity or subsequent retrogression, they remain convincing records of progress in educated art; while from the ruined cities of the Syrian desert and those of the Upper Nile, more particularly Edfu, where the wretched huts of the present inhabitants are crowded around and within the precincts of the Temple, even on the summit of its half-buried walls, we have an unfailing guide which proclaims a former refinement and present barbarity unparalleled in the page of history; and looking upon it as a memento of the past, the mind is insensibly hurried back to a remcte era, ages before Christianity was known, peopling, in imagination, the desert waste with all the appliances and the glittering pageantry of refined life, and reproducing within the desolated pile the most gorgeous rites ever performed by man in the name and semblance of religion.

Let us review in thought a period less remote; in our own country, and far nearer to our own time, where once a rich flood of subdued and mellowed light poured through the stained glass of traceried windows upon a tesselated pavement, where a crowd of worshippers, kneeling and bowed down in reverential devotion, breathed forth before the sacred symbol of redemption their orisons to the Most High, while one of the most solemn of gorgeous ceremonials within the ritual of a Christian church was being celebrated, accompanied by the richly-swelling tones of the organ echoing through its vaulted aisles,—there stood its marble-built altar, with its delicately-traceried reredoss; there the costly shrine of its founder—their places are now occupied by massive sculptured monuments and mouldering effigies to the once mighty dead;—there are still the sedilisæ, lichen-clad and overgrown with damp moss; and there is the dark green yew and the gnarled oak shadowing the roofless walls, while the ivy of centuries conceals the florid tracery and highly-decorated sculptures of its builders, pendant in festoons from its chancel arch and climbing to the highest pinnacle of its tower, it casts a melancholy shade over the newly-made grave, dug in the tall rank grass, where the last sad rites of Christianity are now being performed, surrounded by decaying emblems of mortality. Or the ruined castle—a memory of feudal times—where the mailed warrior, armed to the teeth, rode forth from the portcullis gate, attended by a knightly throng and followed by numberless retainers, intent possibly upon rapine or of slaughter. Its court-yard is now grass grown, no haughty standard floats from its lonely tower, and silence and desolation reign through its echoing walls. All these remains convey a solemn lesson, time-worn as they are; enough still exists to shew what once they were. Century after century, and age after age, they have outlived their builders, and yet they continue to teach how man, in his short term, can call into existence structures which shall unfold his history to unborn generations.

In Ireland, within the past quarter of a century, there has been more development of taste in building than existed for centuries previous, if we except the magnificent public edifices, the bridges, and noblemen's mansions erected in the capital prior to the Union, to which architectural embellishment was exclusively confined, for it is well known that, unless by the few with unlimited means, the services of the architect were then seldom called into requisition, building, for ordinary purposes, after a stereotype model appearing to have been the rule; but now architecture and its sisters of the arts are manifesting more vitality in every quarter, despite of many discouraging influences, than exists in some of the most favoured countries of the world, and will bear marked comparison with many.

Thanks to public benevolence, thanks to private munificence, Ireland may now boast, in all its religious denominations, of buildings devoted to Christian worship, completed and in progress, which may, as works of ecclesiastical art, vie with those of more pretentious character in other countries. The Protestant Episcopal Church, in many instances, appears to have awaked from its long apathy in this particular, of which we have had, during the past few years, several fine examples. Let us hope the effect of its disestablishment will be, in casting it upon its own resources, to imbue a new energy in its congregations, and impart a greater desire to render the house of God worthy of His worship; and although we cannot fail to admire the numerous dissenting churches which have been built within a comparatively short space, alike creditable to their architects and their founders either private or congregational, it is to the Roman Catholic community we are most indebted. In every town and every village the plain structures of a past age have given place to new churches from the best models of art.

We have written so much at former periods of the improvement in street architecture, little remains to be said now. The unpleasant repetition of the flat arch in lines of square-headed openings of the past age are rapidly being replaced by more picturesque features, and the streets of the capital and Irish cities generally are assuming an appearance more in accordance with ideas of art. Mercantile establishments of elaborate design, and built to last for ages, together with banks and other public offices of the most enduring material, and faultless as works of art, now occupy our principal thoroughfares, and we only require a few noblemen's town mansions in our principal squares to complete the picture. Nevertheless, we must refer with pride to several private edifices erected throughout the country—the works of eminent architects; and while they develope the resources of native art, they are pleasing evidences of that refined and educated taste for which Ireland stands pre-eminent in; at the same time justice compels us to remark that we could refer to some examples which, to say the least of, are either very unmeaning-looking structures indeed, or are so heterogeneous in style, that it would be exceedingly difficult to classify them by any recognized rules of ours; possibly this may be attributed less to the want of taste in the architect, and more the meddling dictates of the owners.

Within a few years some accessions have been made to our list of national memorials; some of these, as works of sculpture and of art, are faultless, others we cannot eulogize.

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Let us hope those for which funds have been collected, and are still in embryo, will merit the eulogiums we would gladly bestow. While we are upon this subject, we are happy to congratulate our countrymen that the advice given by us in an historical description of the Exchange, published in this journal February 1st, 1867, though not then acted upon, has at length forced itself upon the Corporation of Dublin,—we mean that Hogan's great work, the O'Connell statue, has been, in the early part of the past year, removed from the incongruous position it occupied for a short period into the interior of the City Hall. We cannot conceive what barbarism dictated the placing of this magnificent work of art in a position so opposed to all ideas of taste, setting aside altogether the destructive influences of an open air position in a climate like ours upon so delicate a material as statuary marble.

Where praise has been merited we have willingly accorded it; where we have been compelled to censure, we confess it has been more in sorrow than in anger. But taking the architectural prospects of our period for all in all, we must say they are both flattering and encouraging, and will leave many refined and highly-artistic records of our age to posterity. We, therefore, cheerfully follow on in our utilitarian path, wishing a happy, thrice happy, new year to each and to all.

CONVERSAZIONE OF THE ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND.

A CONVERSAZIONE of the Institute was held on the evening of the 16th ult., at its rooms, 212, Great Brunswick-street. The newly-elected President, Jas. H. Owen, Esq., M.A., occupied the chair.

Amongst those present we noticed:—

General Symonds, Sir William Wilde, M.D.; Sir John Barrington, John Wodehouse, A.R.H.A.; Chas. Geoghegan, Fellow; J. Rawson Carroll, Fellow; Mr. Rogers, Q.C.; Colonel Meadows Taylor, A.R.H.A.; Rev. C. Seymour, J. Watkins, R.H.A.; T. Doyle, A.R.H.A.; W. Telford; W. Hague, Fellow; J. J. M'Carthy, R.H.A.; H. B. Dobbin, LL.D.; J. R. Kirk, R.H.A.; Dr. Bell; Dr. Cameron, Hon. Fellow; Dr. E. Hamilton; H. Brett, C.E.; Charles Brien; Wm. Sterling, Fellow; T. Drew, A.R.H.A., Hon. Sec.; C. H. Brien, Assistant Secretary; J. C. Stephens, C.E.; T. Earley, W. Doolin, J. Lyne, Head Master School of Art; John Nolan, E. H. Carson, Fellow; W. Turner, H. Yeates, C. W. Harrison, G. A. Hanlon, J. S. Mulvany, R.H.A.; J. Spencer, W. Sibthorpe, W. Symes, O'Brien Newell, F. W. Stokes, E. M'Cullagh, W. Wright, W. M. Mitchell, W. Woods, Michael Angelo Hayes, R.H.A.; H. Wilmot, G. Booth, R. J. Sterling, C.E.; J. Connolly, J. L. Robinson, Peter Roe, IRISH BUILDER; Captain Barlow, J. J. O'Callaghan, Fellow; Very Rev. Canon Pope, George Moyers, T. Bridgeford, R.H.A.; Prof. Rawdon Macnamara, President Royal College of Surgeons; Rev. Professor Jellett, President R.I.A.; Dr. Todd, Q.C.; J. M'D. Bermingham, B.N.F.C., and A.R.I.A.I.; Very Rev. the Dean of St. Patrick's, J. M'Curdy, Fellow; Parke Neville, C.E.; W. Wight, Thomas Farrell, R.H.A.; Fitzgibbon Louch, T. Millard, E. F. Dunn, T. Fitzgerald, Denny Urlin, Bernard Mara, W. F. Caldbeck, Fellow; G. C. Ashlin, Fellow; J. Vokes Mackey, J.P.

THE PRESIDENT'S ADDRESS.

GENTLEMEN,—It is my first duty this evening to express to you my acknowledgment of the high honour which you have done me in electing me your president. I am afraid that in doing so you followed rather the promptings of kindly consideration than the suggestions of sound judgment. It must be my duty, during my time of office, to strive, as far as in me lies, to justify your choice by careful attention to the interests and objects of the Royal Institute, and by maintaining the *prestige* of the honourable profession to which we belong.

Gentlemen,—It *is* an honourable profession to which we belong; honourable from its antiquity; honourable for the intellectual powers, natural or acquired, which it requires for its successful practice, and honourable from the fame and position it can confer on its practitioners. This is the theme on which I propose to descant to-night; not in order to pander to professional vanity, or with any intention of exalting our own calling to the depreciation of others, but rather in the spirit of self-examination, which, setting up a high ideal, and steadily contemplating it, is the best preventive of self-conceit, and incentive to earnest and patient striving after perfection. To know what we might be is a great step towards becoming it.

In its antiquity our profession extends back farther than a Welch pedigree, but on more sure foundations of reliable record, for the first event of which we read an account after the first great schism in the human family is that Cain "builded a city, and he called the name of the city, after the name of his son, Enoch;" and, I believe, our brothers, the Freemasons ("architect," as they are called in Latin), hold that the traditions of the craft were carried on board the Ark with Noah and his sons. It is certain that the building of Babel took place under his great-grandson, and linked the profession with the beginning of the history of the world. Even were it not written, it must be evident that at no period of the world's history—at no stage in the development of society—in no climate where human life can exist, can our fellow-men do without building and builders. We can imagine, as often has been done, a state of society so perfect in its fulfilment of all social and relative duties as to make the functions of judge, lawyer, and policeman useless; we can conceive a state of the human body so sublimated as to leave the physician his own only patient, and his disease the want of the necessaries of life, but still there must be buildings and builders; and even as the history—as we have seen—tells us of the beginnings of architecture, so does the art become the most efficient handmaid of history, especially in its early stages. This has been well put by Mr. Fergusson:—"Almost all who have hitherto written on ancient history or ethnology have derived their information from Greek and Roman written text; but if I am not very much mistaken, these do not suffice. The classic authors were very imperfectly informed as to the history of the nations who preceded or surrounded them; they knew very little of the archæology of their own countries, and less of their ethnography;" and as regards modern historians—"Their information is derived wholly from what is written, and it does not seem ever to have occurred to them, or any of our best scholars, that there was either history or ethnography built into the architectural remains of antiquity." . . . . . "While they were trying to reconcile what the Greek and Roman authors said about nations who never wrote books, and with regard to whom they consequently had little information, I was trying to read the history which those very people had recorded on stone, in characters as clear, and far more indelible, than those written in ink." . . . . "In an age like the present, every feeling and every information regarding a people may be dug out of its books; but it certainly was not so in the middle ages, nor in the early ages of Greek or Roman history; still less was it so in Egypt, nor is it the case in India, or in many other countries." . . . . "In those countries and times, men who had a hankering after immortality were forced to build their aspirations into the walls of their tombs or of their temples. Those who had poetry in their souls expressed it, in nine cases out of ten, by the more familiar vehicle of sculpture and painting, rather than in writing. To me it appears that, to neglect these in trying to understand the manners and customs, or the history of an ancient people, is to throw away one half, and generally the most valuable half, in some cases the whole, of the evidence bearing on the subject." With such considerations no one can think depreciatingly of the study of architecture, for its details of form, material, and construction are the grammar of the language in which the early history of nations is written.

I also claim honour to our profession for the intellectual powers and resources which it enlists in its practice: this may seem to be contrary to experience. We all know cases which, if they are to be considered typical, rather go to demonstrate that, whatever the abstract architect may possibly be, the concrete as exhibited in Ireland is not exactly the sort of article that we should expect as a finished specimen of Irish culture and intellect. But inasmuch as you would not judge of the Irish Bar from the practice of the Petty Sessions Court, nor select a type of the medical profession from behind the counter of a chemist's shop, so you must be generous enough and candid enough to acknowledge that there may be architects and architects. Just a hundred years ago Roland de Virloys, "late architect to the King of Prussia and since of the Empress Queen," writes of the architects of his age—"Far from having all the talents necessary for the practice of the art, now-a-days provided a man can do a little drawing, he sets up as an architect; and this temerity is not limited to foremen stonecutters and joiners, and workmen of that class. If a mere bricklayer have but built two or three private houses, he assumes the title of architect, and proceeds to give plans and designs for houses to whoever is easy enough to listen to him; insinuating to them that they thereby save the trifling, but well-paid, fees of an architect; their object merely being to free themselves from superintendence, and thus have the opportunity of putting in practice all those trickeries in building to which workmen are only too prone." I have been careful to mention the name, and date, and association of the author, lest it should be supposed that the sketch was of my own making; for such as things were in those days so are they now, and so probably will they be to the end of time. But let us hear what the same author says an architect should be—he is quoting and adopting the words of Vitruvius:—"The architect must be perfectly acquainted with both the theory and practice of the art, in order to arrive at perfection; he must be intelligent and painstaking; he must be able to write and draw; he must be instructed in geometry and optics; have learned arithmetic and know history; have studied physiology; have some acquaintance with music, medicine, jurisprudence, and astronomy. In reality, those who have tried to aim at the perfect knowledge of the art merely through handicraft have never succeeded, any more than those who have imagined that simple knowledge of drawing and theory would suffice;

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they have never attained to more than the shadow; those only who joined practice to theory have succeeded, because they have armed themselves with everything necessary to success." He adds:—"He must be able to draw in order to be able to trace out with ease all the work he projects. Geometry is necessary to enable him to use properly the rule and compass, to lay off lines of frontage, and settle everything by square and level. Optics help him to judge of the admission of light, and arrange openings according to aspect. Arithmetic is for calculating the cubical contents and cost of works, and defining sizes and proportions, which are sometimes better ascertained by calculation than by geometry. History furnishes him with ideas as to the ornamental adjuncts of architecture, and with allegories which he should be able to make judicious use of. Physiology aids him in dealing with water supply, and the use and knowledge of metals and minerals. A knowledge of music is necessary for the construction of theatres, and to understand the construction of hydraulic* machines, and other similar instruments. He cannot do without some medical knowledge, to enable him to judge of the relative salubrity of site, and the quality of the air and water; or of jurisprudence, with respect to the construction of party walls, discharge of water from roofs, considerations of custom and usage, so as to foresee all difficulties before commencing a building, and be able to avoid difficulty as to the terms in which all agreements and contracts should be drawn, to the mutual advantage of the contracting parties. Astronomy will serve him in making sun-dials, and setting out the different parts of a building truly to the intended aspects. Consequently, the architect should be of enlarged and manly tone of mind, just, honest, and, what is the most important of all, wholly free from greed of gain; thinking less of enriching himself than of acquiring honour and reputation, and avoiding all that may be unworthy of so honourable a profession." Such is the summary of the intellectual status of an accomplished architect given nearly 1,900 years ago by one whose name has been typical of the profession ever since, delivered to the generation succeeding that which had fought under Julius Cæsar, and thrilled with the eloquence of Cicero, and which itself has, coupled with the name of Augustus, been justly regarded as a focus of development of art, science, and literature. The same thing is said over again substantially 1,500 years later by Michael-Angelo Buonarotti, during the full onward sweep of the mighty flood of intellectual awakening, the new-birth of mind when time and space—the old fetters on the interchange of ideas—being abolished by means of the Printing Press—light and truth set forth on the new crusade against error and darkness, which can never again prevail over the face of the whole earth. There may be temporary eclipses and passing clouds, but they will be temporary—they will be merely passing. There will always be those whose thoughts love to linger with the past. Lot's wife looked back mourningly even towards the Cities of the Plain, but their place and their punishment must ever be the same, to be left behind as pillars to mark the progress of this age; and to us the same analogy may be applied; we are in the midst of this march of progress; let us hurry on with it. "Escape to the mountains," is the command; "onwards! upwards!" Let us not repeat in our hearts, and lives, and practice the lazy, half-hearted prayer, "I cannot escape to the mountains. Behold now this city is near to flee into, and it is a little one." And so settle down in some low-lying "Zoar," some well-called "little" conception of what should be the aims and objects of modern architects. To us, as to all the world, art, science, religion, literature—these open all their resources; all means and appliances are at our command. Let us be up and doing and not be the only profession still lingering about the ruins of the past. Let us not continue any longer the servile task of merely copying, to which, for the last 300 years, the world has condemned us willing slaves. Men's minds are ready and waiting for the architecture of the future. Within my own memory there has been more than one architectural revolution. The beginning of this century brought western Europe, by means of the Greek revolution, in contact with the remains of the classic architecture of Greece, and Roman and Renaissance forms were simultaneously abandoned in England, France, and Germany. Almost simultaneously, or in immediate succession, the younger Pugin strove, by his writings, his drawings, and his works to recall us at once to Mediævalism and common sense; his "True Principles of Pointed Architecture" contains within it the true principles of all architecture, and widely as the pendulum which he sets agoing has swung beyond the true centre, we must be deeply grateful to him for originally giving the impulse, and apply ourselves in earnest to the task that is before us—viz., the production of the architecture of the nineteenth century. That is the mountain on which we shall alone gain safety and honour. The age is ready for it; the pendulum is swinging back from its Mediæval extravagance. It cannot, it must not, be allowed to return to cold, dead, formal palladianism; let us hope we have for ever got rid of it; that the example recently erected in the city by our Free and Accepted Brethren is put up intentionally as the last specimen of it, and therefore so conspicuously the worst. Let us in Dublin look upon it as a Pillar of Salt, a solemn caution and warning; a negative finger-post, pointing us out the way we should not go.

The only remaining point on which I have to enlarge is, that our profession is honourable from the fame and position it can confer on its practitioners. The proof of this position is before me and around me to-night. You who have honoured us by your presence to-night, with no other inducement held out to you than your own wish to stretch out the right hand of fellowship across the boundary line of difference of profession and occupation, are the only proofs needful in the case; other proofs, and many examples living and dead—present and absent—your memory and knowledge will suggest to you, and by not quoting them myself, I shall avoid the risk of a tedious enumeration and any appearance of boasting. I have to thank you on behalf of the Royal Institute for your attendance here to-night, and, in conclusion, I would again thank you, my brother fellows, for the honour you have done me,—an honour which is felt as such most deeply, not merely by me, the unworthy recipient of it, but by one whom you used to delight to honour before age and infirmity and change of abode removed him from us. In Jacob Owen's name, as well as my own, I beg to thank you.

Mr. John M'Curdy, Fellow, proposed the thanks of the Institute to the President for his very interesting address. He referred in eulogistic terms to the services rendered to the cause of architecture by Mr. Owen.

Colonel Meadows Taylor seconded the motion. He alluded to the marked improvement that had taken place in the architecture of our city. He hoped that that was only a beginning, and that the architects of Ireland would transmit their fame to posterity; he assured them there was as much patriotism in erecting good buildings in their country as in its exhibition in any other way.

The President of the Royal Hibernian Academy, in proposing "that the address be printed and circulated," congratulated the Institute on its success. He hailed with gratification the recognition of the efforts of the architects. He hoped that now when the public saw the necessity for having good houses, they would also see the necessity of adorning them with paintings and sculpture.

Sir William Wilde, in seconding the proposition, said he believed that architecture culminated before their time, and, therefore, all they could do was to imitate; but, not to make that imitation servile, they should illuminate the present by taking reflection from the past. He referred to the fine specimens of ancient architecture exhibited in the Cathedral of Tuam and at Annadown; also to the disputed question as to whether Cormac's Chapel at Cashel had been the work of Norman or of Anglo-Saxon architects. He altogether denied that it was the work of Anglo-Saxons.

Mr. Denny Urlin addressed the meeting at considerable length, descanting especially upon the buildings of the present day, and said that had he been on the committee he would have lost the last drop of his blood rather than consent to accept the design for the building of the Masonic Hall, Molesworth-street.

The following communication from Mr. Harte, County Surveyor, Donegal, was read by the Hon. Sec.:—

I have much pleasure in bringing under the notice of Irish architects the specimens of Irish granite sent herewith. On comparing it with the best Peterhead specimens, it will be seen to be several shades higher and richer in colour. The introduction of granite into buildings is now so general that the question of what is the best granite in colour and durability is of the greatest importance, and in these qualities this granite will compete with the best in Scotland. It occurs in the north of the County of Donegal, near Dungloe and Bunbeg, in quarries now in my possession—and only there,—and in quantities most advantageously situated as to raising and shipping it. This specimen has been prepared by the Messrs. Sibthorpe, of Cork-hill and Great Brunswick-street, who have already done so much in the way of ornamental work with our Irish marbles, and, I trust, will do still more with this material, which, I think, is capable, with great advantage, of having its use extended from shafts of columns to several descriptions of flat work, such as archivolts, architraves, string courses, plinths, copings, &c., and from the facility with which it can be worked in lathes for balusters, &c. In a climate like this there seems to me, now that colour must be attended to in designs for exteriors, no medium between terra cotta and polished granite for out-door work. I therefore respectfully claim the support of the Irish architects in favour of our own granite both at home and abroad, particularly when that material can be put into the market at as reasonable a price as the Scotch.

The following were amongst the architectural drawings, &c., exhibited in the rooms during the evening:—

Proposed Carlisle Bridge—design by W. H. Lynn, A.R.H.A., Fellow. Model and drawing for improving present bridge—Chas. Geoghegan, Fellow.

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* The ancient organ was called "hydraulic," or "hydraulicon organon." The bellows were weighted with water instead of lead. One of these water organs was erected as late as A.D. 826, at Aix-la-Chapelle.

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Belfast Municipal Buildings (competition designs for)—W. Fogerty, F.R.I.B.A., and T. Drew, A.R.H.A., Fellows; E. H. Carson, Fellow.
Masonic Hall, Molesworth-street (competition designs)—J. M'Curdy, V.P., Fellow; E. H. Carson, Fellow; W. H. Lynn, A.R.H.A., Fellow.
Kingstown Town Hall (competition design for)—W. Hague, jun., Fellow.
Ardee Town Hall (competition designs)—W. Hague, jun., Fellow; Messrs. Louch and Wilmot.
St. Canice, Kilkenny (restoration of)—T. N. Deane, R.H.A., Fellow; and Photograph of Pulpit, &c.
New Laboratory, Oxford, &c.—ditto.
New Law Courts, London—Photographs from Drawings by T. N. Deane, R.H.A., Fellow.
Howth Church (rebuilt)—Photograph of Doorway, &c., by J. E. Rogers, M.A., Fellow.
Royal Irish Constabulary Barracks (second class, approved design)—J. H. Owen, M.A., President; drawn by E. T. Owen, Fellow.
Conservatory, Chief Secretary's Lodge, Phœnix Park (Photograph)—J. H. Owen, M.A., President.
Roman Catholic Cathedral, Queenstown, Co. Cork (Exterior and Interior, as being erected)—G. C. Ashlin, F.R.I.B.A., Fellow.
Church in course of erection near Chester—E. Trevor Owen, Fellow.
Mansion, Co. Meath—J. M'Curdy, V.P., Fellow.
Design for Church, Glenageary—do.
St. Kevin's Roman Catholic Church, Harrington-st. (2nd prize design)—W. F. Caldbeck, Fellow. Model of, as being erected—G. C. Ashlin, F.R.I.B.A., Fellow.
Design for Villa—W. Stirling, Fellow.
Sketches (water-colour) of Buildings in Italy, &c.—R. C. Millar, A.R.I.B.A, Associate.
Shop and Warerooms, &c., for Mr. Hugh Moore, Capel-street (cause of recent trial)—W. Fogerty, F.R.I.B.A., Fellow.
Tate Memorial, Limerick. (competition design)—W. Hague, jun., Fellow.
Drawings of Crosses, &c.—T. Earley, Associate.
Safety Cocks, Cistern, &c., for relieving high pressure, patented by C. Geoghegan, Fellow.
Additions to Dromore Cathedral, &c.—T. Drew, A.R.H.A., Fellow.
Designs for Churches—ditto—Lithographed by S. P. Close, Associate.
New Chambers for Messrs. Smith and Sons, in course of erection in Stephen's-green—ditto.
Measured Drawings of Holycross Abbey, County Tipperary, which obtained the "Fitzgerald Silver Medal" of Institute, session 1868-9—Lithographed and published by author—S. P. Close, Associate.
Manse, St. John's Roman Catholic Church, Kingstown—Charles Geoghegan, Fellow.
"Ridicula Rediviva" (second series)—a series of clever original drawings about to be published—J. E Rogers, M.A., Fellow. (The first vol. of series already published.)
A Collection of Specimens of Marbles from their Irish quarries—H. Sibthorpe and Son, 11, Cork-hill, and marble works, Great Brunswick-street.
Specimen of Red Granite of Donegal (see special description)—W. Harte, C.E., F.R.G.S.I.
Registered Kneeling-stool and Cushion for Churches—Messrs. Gregg and Son, Brunswick Works, Gt Brunswick-street.
Patent Argand Gasburners, &c.—ditto.
Collection of Architectural Photographs, and Photographs of Machinery, &c.—Messrs. Millard and Robinson, Lr. Sackville-street.
Specimens of Stone Carving, &c.—Mr. Harrison, Gt. Brunswick-street.
Designs for Decoration of Rooms, &c.—Mr. Mannix, decorator, Middle Abbey-street.
Specimens of Iron Work, Gas-fittings, Brass Lectern, and Encaustic Tiles, &c.—Messrs. Hodges and Sons, 16, Westmoreland-street.
The Apomecometer, for measuring heights of buildings, &c.—Registered by R. C. Millar, A.R.I.B.A., Associate.

ON THE LIMITS OF VARIETY IN ARCHITECTURAL DESIGN.*

WE are going to inquire how far it is possible for us to produce perfect originality in design; and to that end we must examine the different sources of variety in design, some of which appear to be unlimited, others more or less limited, in extent. There are two important matters that would appear to require special attention in these inquiries; that is to say, outline and style. The first, however, of these we must leave, as requiring a separate treatise of sufficient extent to occupy a whole evening's attention; and the other—that is, style or school—being a *result*, and not a primary source of variety in design, we shall only introduce incidentally, and by way of occasional illustration.

In the more detailed view of art that we are about to take, we shall observe six of those sources of variety:—1. Order of proportion. 2. Mode. 3. Order of projection. 4. Method of Construction. 5. Material. 6. Individual taste. And we do not pretend to make any new or wonderful discoveries, but only to lay before ourselves that which we all know already in such a manner that we may be better able to make, perhaps, better use of it than we have hitherto succeeded in making.

We shall use the word order in such a way that it may apply not only to those two schools of architecture with which conventionality associates it, but to all schools, as far as possible, that now exist, or that may hereafter be produced, or discovered in plans at present unexplored.

We shall before very long be met with the remark that our predecessors in art designed what they thought *looked well*, without regard to any rule. But real experience in designing will show us that a good sound fundamental, not scholastic rule, is a great help, and far from being a means of restraint.

Most buildings of any importance are divided into a certain number of bays, compartments, or sections, for the convenience of construction, and of lighting the interior, and for other economic purposes.

The word *section* is more properly applied thus than to the cutting through of a building to show its construction. The Latin word *sectio* means a portion or division of a treatise or object for architectural section, longitudinal or transverse, would be more properly termed a *scissure*, from *scissura*, a Latin word of identical meaning with this.

It will not be too presumptuous to suppose that the class of objectors above mentioned will admit that in any one of these sections or divisions there must exist some proportion between the height and width—that is, from centre to centre of column, buttresses, pilaster, pier, or atilæ. The height being that of a single story from base line to top of column, springing of arch or underside of epistylium, according to the mode of construction.

We must now beg leave to be allowed to divide that width into as many parts as we like to form a scale for our orders, and having obtained permission, we will divide it into four parts, and according to the number of times these parts are contained in the height, so we may classify our orders.

Now, you see, in this source of variety there is no *certain* limit, though at the same time it is not of infinite extent. It is left to individual taste where to place the boundary.

Except in such a building as a bridge, which may be considered as a sub-ordinary, less than three parts should not be used for the height. Our old church architects in their simplest structures, and the Italian masters in their attic stories, seldom went below this. Calling this the first order in ordinary designs, nine of these parts will give the seventh order—a proportion seldom exceeded either by precedent or good taste, except in a peristyle of detached columns, which may be looked upon as a superordinary structure.

Now, concerning ordinals, that is, accompanying details to the several orders. The Greeks to a certain extent, the Romans to a greater extent, the Italians to a still greater extent, and the modern uninventive imitators to a positively *insane* extent, associated a certain *mode* inseparably with each order, so that we have come to use the proper adjectives, Doric, Ionic, Corinthian, as though they were ordinal numerals, and suitable for distinguishing one degree of successive rank from another.

If we use a simple shaft for our first order, as the English church architects generally did; four shafts for the next order; eight for the next, as the above masters also frequently did, and if we add four shafts, also, to each successive order, our sixth order will contain twenty and our seventh twenty-four. Now, substituting hollow flutings for shafts in these upper orders (they are more suitable), this is exactly what we find in those two well-proportioned Greek examples, the temple of Thesius and the Ionic temples of the Ilyssus. The first of these is in the Doric mode, and the other in the Ionic; but in the Temple of the Winds at Athens, the columns have but twenty flutes, and are lower in order as regards their distance than any Ionic example; and yet, here you see the *mode* is Corinthian. This example draws our attention to another ordinal—foliation. It belongs to a particular mode, and we must not forget to revert to it in its proper place.

The Assyrians put their columns still closer together, and used rectangular indents for ordinals, and went as high as thirty-two or thirty-six to each shaft. Some good examples were burnt at the Crystal Palace, which is to be deplored. The convex flutings of the Egyptians, generally more in number than the Gothic shafts, and generally though not always less in number than the Greek flutings, are specially adapted for the middle orders in our scale. Now, it so happens, that having granite instead of stone, and not requiring the arched construction, we find that the Egyptians actually did use these middle orders of proportion. The chief ordinal of the Roman school may be taken to be the leading horizontal lines in the entablature. The several orders show 3, 4, 5, 6, and 7. These are the faces of the architrave, the freize, the modillion, mutule, dentel, and corona courses. The leaves used for decoration in the initiative mode of architecture, are in most schools more simple and less indented, or cut up, in the lower orders than the higher; this is noticeable in the example above quoted in the temple of the eight winds. This minor detail of decoration then forms another ordinal, and it is a useful study for the designer to sketch everything of this kind in nature that presents itself to his notice, and then to classify them according to his own taste and judgment.

The profile of mouldings should also vary according to the *order* of the composition. Both precedent and good taste authorise this arrangement. For while Mediæval and modern masters in the Italian school use in the lower, and even sometimes in the higher orders, mouldings of circular outline, we find little or no precedent for it in antique examples. In modern Tuscan and Doric, we find a quadrant-shaped echinus to the capital, but in Roman examples of these modes, we find ellipses of greater or less variation. In the high order of the Greeks, parabolas and hyberbolas are used, and in the low order of the English schools the circular profile finds its proper place. Now, we propose a scale of ordinated mouldings to agree with our orders of proportion, called the *declension of the conic scissure*. To provide for a series of seven orders, we take a cone of 60 degrees. The vertical scissure gives a hyperbola for the seventh order. The next, declining 15 degrees, gives an oblique hyperbola for the sixth order. The next, declining 15 more degrees, a parabola for the fifth. The next three, each declining 15 degrees, give three ellipses of decreasing variation for the next orders; and the oblative, prostrative, horizontal scissure, a circular contour for the lowest or first order.

The next source of variation is that of mode. All ornament may be said to belong to three simple modes, or to combinations of two or of all three of them, making four additional composite modes, and the plain unadorned, or Tuscan mode, as we should say, in reference to the Roman school, makes an eighth. And of those simple modes we have, first, the Geometric; 2ndly, the Decorative; and 3rdly, the Imitative.

The Geometric mode is illustrated in the Greek and the Roman schools in the ornaments of the Doric examples; in the Norman school, in the capitals and ornaments of tl arch, such as the chevron and billet; and i the earlier Gothic schools, in the geometri tracery of the windows.

The Decorative mode includes all ornament not geometric or imitative, such as is illustrated by free-hand drawing, without copying from nature. This is the true architectonic style, and is found in every school of architecture, in the time of the ancients, and in nearly all varieties of the Arabic, Hindoo, and Moorish schools, in the Romanesque, the Byzantine, and Lombardic.

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* Read before the Architectural Association, London, on 3rd ult., by Mr. W. Scargill. Extracted from the *Builder*.

And the remaining mode in the Corinthian mode of the classics, in the Egyytian, the Romanesque, and the middle periods of Gothic, in which latter it is used irrespective of order.

By the Imitative mode we mean that class of ornamentation which is copied from nature, more especially from natural foliage, and to which we have before alluded in our remarks upon ordinals.

The third source of variety in design is that of Projection. As regards this matter, we must have recourse to precedent, which furnishes us with six orders or degrees. 1. Incised ornament; 2. Superficial ornament, such as mosaic work and ornamental paving; and this order, though a minor order of architecture, embraces the whole art of painting—a great art in itself, extending itself, in a manner, beyond the province of this art of architecture in which it finds its place as a subordinate feature; 3. Positive projection next begins in basso-relievo; that is to say, for the most part imitative ornament, in which the outline is preserved literally, but with a depressed projection or profile; 4. Mezzo-relievo, where both outline and profile are strictly true to nature, but the objects projecting but half their bulk from the plain surface which they serve to decorate; 5. Alto-relievo, which differs from the last only in the figure being nearly detached, or sunk but a fourth of its depth into the superficial plane; 6. And beyond this comes detached ornament, and this applied in the imitative mode develops itself in another of the fine arts, expanding beyond the province of architecture, and bearing the honoured title of the *Art of Sculpture*.

In the methods of construction we can hardly find room for an ordinated or classified arrangement. There would seem here to be two extreme points of limitation in construction: that is to say, the reponent and the salient, with but one or two points of transition. And beyond these we can find no new orders or arrangements sufficiently distinct to characterise a school either entirely new or entirely original and unique as regards its method of construction. But we must now explain the meaning of these terms *reponent* and *salient*.

Reponent, then, is the proper term to apply to solid masonry, in which every portion of material has a solid bearing. This construction only provides us with an enclosing wall to our buildings; for as soon as the necessity of a door, window, or roof presents itself, one step is taken in the direction of the other mode of construction, and this step is the habitative method. This construction, however, is associated with the reponent, and forms the great line of distinction of the Greek, Egyptian, Hindoo, and Syrian schools, from the Sarcenic, Moorish, Romanesque, and Gothic.

The semicircular arch, belonging rather to the salient method, has this imperfection in its character; that, at one single point, viz., at the crown of the arch, it is related to the trabeative construction. The zenith of a vertically-placed circle being in that one point, and only one point horizontal in its direction.

The Gothic schools may be looked upon as perfect illustrations of the salient method, both in their arches and in their timber roofs—that is, in those that have no tie-beam.

And all arcuative constructions, whose arches are formed by one curved line, whether circular, segmental, hyperbolic, or parabolic, may be looked upon as homogeneous one with another, as the seme remark applies to them, as we just noticed, as applying to the circular.

These methods of construction, then, show us but little variety for our designs, the most we can make of them being these three—the trabeative, the unilineal arcuative, and the bilineal arcuative. We must leave this head of our treatise for the present—we shall revert to it in our concluding remarks—and proceed to consider the question of material.

Both Vitruvius and the dogmatising revivers of classic art, insist very strongly upon a column of a certain mode, contain in its height a certain number of diameters, whether constructed of brick, stone, marble, granite, iron, or wood; and whether supporting a simple epistylium, a roof, or one, two, three, or twenty stories of superstructure. Now, if we wish to design with truthfulness, originality, or common sense, we must at least throw off such oppressive fetters of conventionality as these.

There are two circumstances in nature or in the conditions of architectural construction that will determine the construction of a column or pier, after we have determined its height to suit our convenience, and its order and mode to suit our taste. One of these is the superincumbent weight to be sustained, and the other the material selected for construction. We may reduce these materials to about four orders, so that here we shall have another multiple wherewith to extend the limit of design.

The weight of superstructure being a fixed quantity, the greatest diameter will be required for columns of brick; the next less for those of stone or inferior marble; the third for those of granite or hard marble; and the least for those of iron and also of wood—for this, though less hard or durable than the others, is, or ought to be, used only to support superstructures of the same material.

There remains one more source of variety in design that has no limit and never will have. We have seen how many combinations and variations may be made by multiplying together a chosen number of orders of proportion and of projection, and a determined number of modes, methods, and materials. But we shall never determine how far these may be extended by that inexhaustible multiple *individual taste*. We might propose not only to each of those present in this room, but to all the profession that now exist, have existed, or are predestined to come after us to produce a composition of one fixed proportion, in one particular order, one mode, one order of projection, one material, and one method of construction; and if each one's own individual taste were followed, there would still be no two exactly alike.

We now see how unbounded in some directions, and in others how narrowly hemmed in, are our resources of originality. We see clearly how in one sense any number of new schools of art may be produced, and in ananother sense how impossible it is to do much more than reproduce; and this leads us to a few concluding remarks on the much-ventilated subject, the possibility or probability of a new school.

We almost disbelieved our own experience, when it first occurred to us that there does not exist to our knowledge a school of architecture in which the semicircular arch forms the leading feature, and which at the same time has a regular system of orders. In the Roman school the arch is a subordinate feature springing from an impost built against the column to receive it. The column of the Roman school is by no means adapted to carry an arch. In the first place, it diminishes upwards, as in the Greek school. The ill effect of a column of this kind supporting an arch may be seen at St. Leonard's at Shoreditch, Spitalfields, and other churches of the eighteenth century. Then the capital and abacus are most evidently of a suitable form to carry an epistylium, but not an arch. Sometimes a square block of entablature is stuck into each column, the effect of which is both hideous and laughable.

Now, by the time we have cleared away such an obtrusive feature as that above mentioned, done away with the tapering of our column, and designed a capital of the right form to connect the arch with the column, we shall have done something towards the production of a new school. But you will object that all has been done already in those several schools that may be called Romanesque, but in these schools there is no ostensible system of classification: there are no orders or ordinals that we can lay hold of so as to know at once how to treat a given subject, when perhaps we have little time for thinking. It is chiefly to save your time that the foregoing classifications of order, and mode, and other matters have been placed before you. And here we have just pointed out to you an admirable opening for originality in as perfect a form as that quality can be said to exist. Revert to what we have said concerning order, make your scale of orders, say seven, as above suggested. Draw these out in the eight modes we have described, simple and composite. There are fifty-six changes for you at once. Now vary these in five orders of projection, and you have 112 changes. Now try each of these in four different kinds of material, as we have also described, and you have 448 varieties of treatment, or, as some would say, 448 orders; and we may flatter ourselves that 448 orders are pretty good for a new school of architecture.

We said that we should leave out of the question the subject of outline, but it occurs to us at this moment that there is a noticeable analogy between this and method of construction; the trabeative being associated with a square, flat skyline; the salient with a pyramidal outline; and the circular-arched formation with the dome.

It remains for us now only to request of you that in any critical remarks you may be led to make upon this treatise, you will observe that it is composed of these distinct elements:—1. Matters of natural fact; 2. References to precedents; and 3. Our own suggestions: and that you will as much as possible recognise the difference between these as they occur, and not mistake one for another.

LETTS'S DIARIES, &c.

Messrs. Letts, stationers, New Cross, London, have favoured us with samples of their diaries for the current year. They are got up in excellent style, and embrace a large amount of information, many tables, and useful hints. The "Broad Shilling" will be found a valuable handy-book for the pocket of the man of business; it gives an entire week in the opening of two pages, and is ruled with double cash columns. The "Appointment" provides means of noting engagements for every hour on ordinary working days, and in it also is included the usual information. We need not here enumerate the other diaries and their styles, &c. The "sectional" tracing and drawing papers, of various sizes, will be found useful as well as economical in architects' and builders' offices when rough plans are required. A bundle of 250 gummed labels for threepence, is issued by same firm.

Harding's Roofing.—Among other novelties exhibited at the late Smithfield Club Show at the Agricultural Hall (London) was a model of a house, covered with Harding's Flexible Roofing, which is now so extensively used by the Admirality, Metropolitan Board of Works, Railway Companies, &c.; in fact it is so highly approved of that asphalte roofing felt is entirely dispensed with and this much more durable and efficient covering exclusively adopted. We find the price of this excellent roofing has recently been reduced to one penny per square foot, making it the same as the common asphalte; it is really astonishing that such an article can be produced at so moderate a cost. At the late Amsterdam Exhibition the first prize (a silver medal) was awarded to Mr. James Harding, for this celebrated roofing, for its superiority and cheapness, although the price was then 50 per cent. above that of asphalte. It should be borne in mind, too, that the asphalte roofing felt makers were all present with some of the best specimens of their manufacturers, and the fact now of the uniformity of price renders it the greatest boon to the comsumers of that article that could possibly be afforded them. Harding's Flexible Roofing, is patronized by the English and Foreign Governments and all the leading Powers throughout the World.

VILLA AT STRANDTOWN, NEAR BELFAST.

The villa which is the subject of our illustration in this number, is to be erected for Mr. James Shaw, at Ballymaclean, about three miles from Belfast. The situation is elevated, commanding extensive views of the Lough, and the Antrim hills on the opposite side, as also views of Belfast town (should we not say city ?) and suburbs, and of Belmont, the residence of Thomas M'Clure, Esq., J.P., M.P. for Belfast. This gentleman is landlord of several townlands in the district, and has given encouragement to build, by granting long leases at moderate rentals.

Strandtown Villa will comprise two front sitting-rooms, each 24 ft. by 18 ft., exclusive of the bay projections ; two smaller sitting-rooms, each 16 ft. square ; ample hall and staircase, and back stairs ; eight bed-rooms and dressing-rooms ; convenient kitchen, culinary apartments, &c., &c. Attached to the villa there are about thirty acres of land.

Messrs. T. Jackson and Son, 16, Donegall-place, Belfast, are the architects.

WHY MORTAR CEMENTS.

We are often asked the question, " Why some mortars harden, while others never do?" Every builder's labourer knows what are the component parts of good mortar, but every one is not acquainted with the chemical changes it undergoes, or the conditions necessary to produce it. Mortar, to be durable, must be composed of silica or sharp sand and hydrate of lime, or what is commonly called slacked lime ; the absence of all loamy particles is necessary to make good mortar, yet we often find a bad cement is produced when both lime and sand are of the best quality.

The induration of mortar is produced by the gradual conversion of hydrate of lime into carbonate of lime, and is effected by the slow absorption of carbonic acid gas from the atmosphere, and this continues so long as any particles of moisture remain in the mortar. The more slowly this process is carried on the better becomes the cement ; hence we find that the mortar used in walls built in very dry weather is never so good as the same mortar used when the atmosphere is moist, because, in drying too quickly, the carbonate is not either formed at all, or, if it is, it remains so much divided it cannot acquire the necessary adhesive properties. On the other hand, if exposed to too much wet, portions of the lime gradually dissolve, and what remains is converted into carbonate with great difficulty, the particles of sand becoming isolated. Therefore, if mortar in a wall can be kept moderately moist for a sufficient time, the carbonic acid gas acts slowly but incessantly, and the water contained in the mortar becomes gradually saturated with it ; this acting upon the lime, it is converted into carbonate in successive portions, and produces the best mortar. With clayey sand—or, as we often find in suburban buildings, clay used as sand—this conversion into carbonate of lime becomes impossible, because there are few or no particles of silica for the lime to grasp ; it is therefore reduced into a substance which pulverises to the touch. The opposite takes place during frosts, even where the sharpest sand is used, because the expansion of the water arrests the absorption of carbonic acid gas, and frees the lime from its hold on the silica.

All porous brick, and a great number of the sandstones, when used in dry weather, should be well soaked in water in order to avoid the rapid absorption of moisture from the mortar, and thereby preventing the formation of carbonate, as we have already shewn. Take, for example, Tullamore or other equally porous bricks set in the best possible mortar, and you can at any time easily pick them out of the wall without a particle of the mortar adhering ; and, in addition, you will find the latter can be without difficulty reduced to powder. Let the same bricks be steeped in water and used in a position where the mortar must dry slowly —as in an underground arch,—and all the efforts of labour, after a sufficient time has elapsed, will not remove a single brick whole, as they will be smashed to pieces before you can disturb their hold of the mortar.

Much has been said and much has been written about the tenacity of the mortar of the ancients ; the most impossible ingredients have been stated as being used in its composition ; but we are convinced the great secret existed in using only proper materials, and attending to ordinary natural laws. This, we fear, we can never teach where a merciless economy or a slap-dash style of building prevails.

A great mistake occurs with some builders in using air-slacked lime, or making what is called putty mortar, for plastering (in order to avoid the ugly blotches known as blistering), because both have already re-acquired carbonic acid from the atmosphere under circumstances which diminish rather than increase the solidity of the mortar. We generally find, when prepared in this way, it much more easily loses its bond upon lathwork than if made up in the usual manner in heaps, and allowed sufficient time to permit the least burned particles of lime becoming thoroughly slacked. The same argument applies to wall-plastering, where it never acquires a proper degree of induration. People occasionally wonder, when they drive a nail in a wall, how easily it can be pulled out. They generally tell you the sand has been dug out of the foundation ; at the same time it may be that it is of the best possible material.

We have written this paper exclusively for our junior friends, because we are so often asked " Why mortar cements, and why it is porous bricks take no bond ?" There are many other matters in connexion with the subject, as hydraulic mortars, the different cements, and plaster of Paris, to which we shall possibly return in a future number.

PUBLIC WORKS IN THE SOUTH AND WEST OF IRELAND.

The highways over which I have travelled in the County Carlow may be set down as first-class ; the bridges, culverts, &c., are well formed and in a sound state. A similar remark may be made on the roads in a neighbouring county (Kilkenny). These counties are under the *surveillance* of excellent men in their profession—Messrs. Bower and Burtchaell, C.E's.

From near Kildare on to Bagenalstown and Kilkenny the railway is admirably conducted. Were it not for the tardiness of the directors in giving cheap excursions to this region of the globe, we would be well satisfied with the manner in which the Carlow Branch of the Great Southern and Western Railway is managed. The Bagenalstown and New Ross Railway is a complete failure ; it was opened for traffic some eight or nine years ago, and closed after a few months' running. This line is very injudiciously laid out through a poor and sparsely inhabited country as far as Ballywilliam (twenty miles). The route this line should have taken was to branch off from Carlow through Tullow, Newtownbarry, Enniscorthy, and on to Wexford. The portion which has been made was " knocked down " to a London Jew or Gentile of the name of Motte for £20,000—about one-fourth of the cost of the rock cutting and viaduct at Borris. Oh ! shades of William Dargan and John Bagnall ! what a sacrifice this is for unfortunate Ireland to bear !

The bridge over the Barrow at New Ross is not a very strikingly grand or imposing looking structure ; the piers are too dumpy in appearance—they are, I understand, on the same principle as the railway bridge over the Shannon at Athlone : each cylinder is put in position, made air-tight, and as each becomes fixed it is filled with brickwork, so that when, after the lapse of a century or thereabouts, the outer coating of these piers becomes corroded and useless, the inner part of the cylinder will be able to sustain the weight of the superstructure.

The Waterford and Limerick Railway I found to be well and faithfully managed ; its guards and sub-officers are exceedingly obliging. Mr. Tighe, the engineer, has no small amount of difficulty in substituting stone and iron bridges for the wooden ones erected some twenty years ago by Mr. Osborne. This line is now looking up after a long night of sorrow and depression ; the receipts are, I perceive, upwards of £2,000 per week, or about £30 per mile.

The scenery along the line — Carrick to Cahir and Tipperary—cannot be surpassed in any country. Such splendid glimpses one gets of the Comeragh and Knockmelldown mountains on the left, and skimming along the base of the isolated Slieve-na-mann.

Reach Limerick at night-fall ; rest a few minutes whilst our ferruginous horse is satiating his thirst, and get as far as Ennis by nine, p.m. Start for Gort and Galway next day. I was struck with amazement at the large size of the Lunatic Asylum at Ennis ; one would imagine this establishment could accommodate all the indoor and outdoor idiots, madmen, women, and children in the whole kingdom of Ireland !

The roads in the County of Clare are, in my opinion, coated with gravel of too fine a description. For all highways on which there is the average amount of traffic, the material should not be broken under or with a smaller gauge than a 2-inch ring. The roads in Clare are, on this account, intolerable to the tourist during summer, as the limestone is soon ground into dust : what, then, must they be in winter ? The same error is carried into the neighbouring County Galway—extremes are bad. In another county north of the latter, the material is broken too large. There should be a certain standard laid down and generally adopted by the surveyors of districts in the kingdom ; say, for all public thoroughfares the gauge to be a 2½-inch ring, and minor roads 1½-inch ditto.

Galway is progressing in spite of the withdrawal of Government patronage. There has been recently erected an extensive factory for the manufacture of clogs ; I understand it is doing a good trade. It is built on the peninsula at the entrance to Lough Corrib, near the new college.

It having been at night that I posted over the road through Headford on to Ballinrobe, I cannot give any correct opinion on the state of the highways in this part of southern Mayo, further than the music of the car telling me ever and anon I was travelling over a sound and well-laid thoroughfare. This part of Ireland is much more carefully attended to now-a-days than heretofore ; the water-channels are nicely dressed and lined, and some of the projecting stones are gradually disappearing ;—thanks to Mr. Deane, the present active County Surveyor for South Mayo.

In my next I shall have something to say of the " Pearl of the West," Ballinrobe, Westport, Croaghpatrick, Clew Bay, &c. C.E.

THE EXHIBITION PALACE AND WINTER GARDEN.

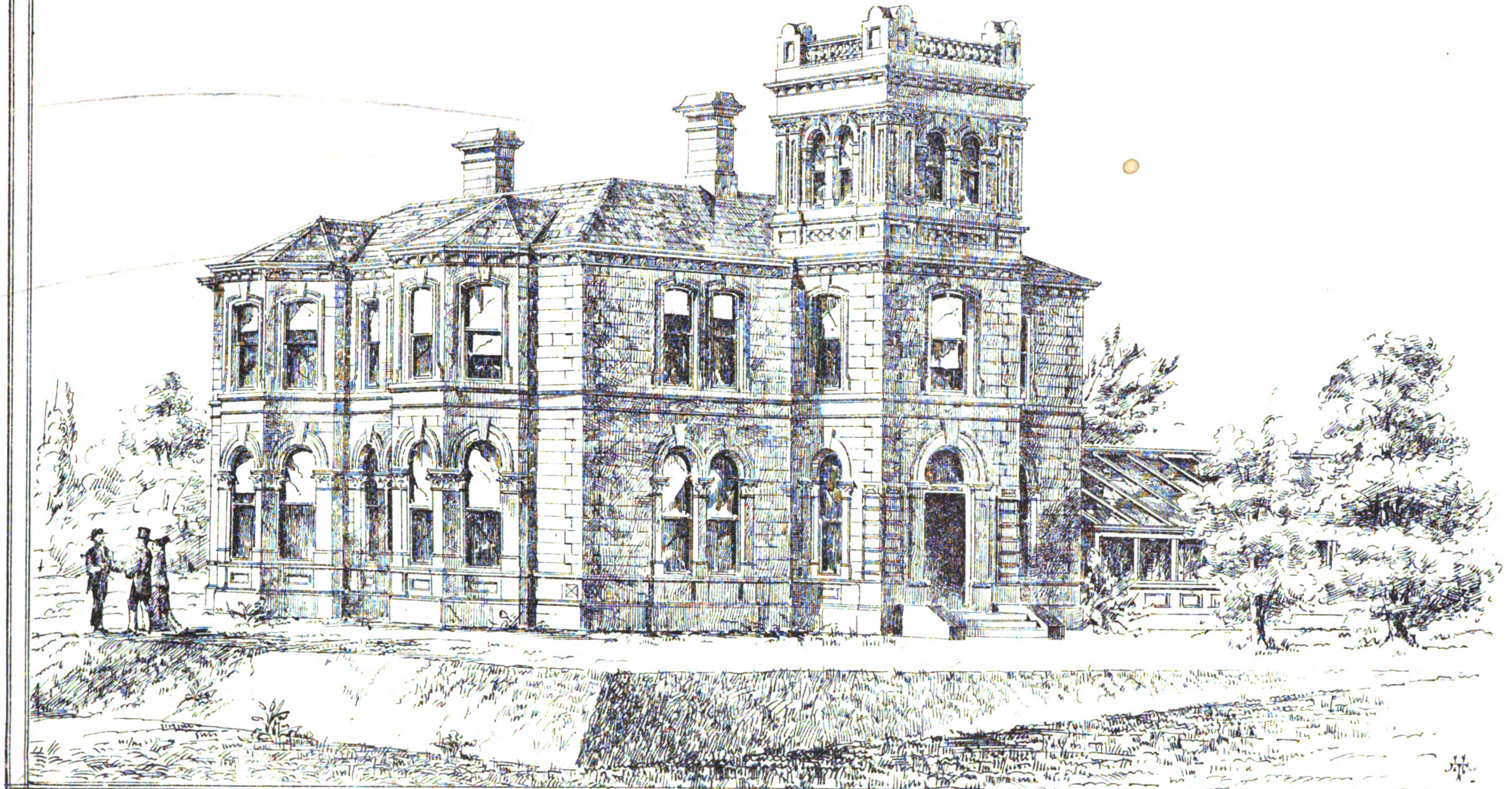
Pursuant to an order made by the Vice-Chancellor, the leasehold premises and chattels of the " Dublin Exhibition Palace and Winter Garden Company, Limited," were put up for auction at one o'clock on Thursday, in the board room of the building. Mr. Geo. Tickell, auctioneer, having read the conditions of sale, as contained in the order of the court, observed that the premises and effects offered for sale cost £100,000. The first offer made was £5,000 by Mr. James Dillon, Mr. T. Vance bid £20,000, Mr. Brunker £25,000, and Mr. T. Vance £30,000. Mr. Tickell announced the final bidding three times, and, there being no advance, he declared the building had not been sold, but the lot had been withdrawn for the benefit of the parties interested in the property.

The Irish Builder.

No. 241. Jany. 1st. 1870.

Villa at Strandtown near Belfast,

Thos. Jackson & Son. Archts.



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DUNDALK AND GREENORE RAILWAY.

WITHIN the past week we had an opportunity of inspecting the works in progress along the line which is to connect Dundalk with Greenore Point. The bridges and culverts completed are built of the finest limestone, and executed in the most permanent manner—in fact we have seldom met better masonry. Messrs. Olley and Connor are the contractors for the line. At both ends of the line considerable difficulties have, at the present season, to be encountered in the formation of the embankment,—from the nature of the slob at the Dundalk end, and from the high tides and winds at the Greenore end. The Messrs. Grendon, of Drogheda, have taken the contract for the viaduct across the Dundalk river, and are progressing as rapidly as possible with the screwing down of iron piles, on which the foundations of piers will rest. The Riverstown valley will be crossed by a limestone viaduct of five spans of great width. On the north-east side of Greenore an extensive gridiron has been laid down at low water: it is composed of balk timber, well bound and tied. The site for the docks is marked out, and the powerful steam-dredger *Greenore* is constantly at work clearing a bottom. From the dock walls a pier will stretch out into Carlingford Lough; at the end of the pier will be erected a lighthouse. In *this* "part of the United Kingdom called Ireland" there are numberless openings for the judicious outlay of capital to any amount. If we mistake not, Greenore will yet become a seaport town of some importance. It is announced that early next year powerful steamers, belonging to the London and North-Western Company, will sail daily from this port for Holyhead. It is probable that early in the spring the works on the Newry and Greenore line will be resumed, and the northern traffic in great measure diverted to this hitherto neglected, altho' nature-formed, port of departure. There are beautiful sites for villa residences along the shore from Greenore to Carlingford, and on to Omeath. A building company, on the limited liability principle, that would *at once* commence operations here, would be sure of realising a handsome return. For several years past there has been a great lack of house accommodation for summer residents—to our own knowledge, in one instance an almost fabulous rent was paid for a furnished house during the bathing season, of about four months, last year. By rail to Dundalk, and thence by car, Greenore may at present be reached in three hours and a-half from Dublin. It is to be hoped that some feasible and satisfactory plan may soon be proposed and carried out for the amalgamation of the three companies interested in the line from Dublin to Belfast.

EARTH-BORING AND COAL-CUTTING.

THE following is an abstract of a lecture delivered by Mr. Traice, and reported in the *Colliery Guardian*:—

The lecturer stated that where water could only be reached at great depths, but would then rise to the surface level, or near to it, boring a small hole had been resorted to instead of sinking a well, and that the practice was of considerable antiquity. The Chinese, who had many of the arts of a high civilisation while the people of this island were little better than savages, had bored for water many centuries since. Their plan was simple, but very limited in its operation, as they hung a cutting tool to a common twisted rope, and by raising it and dropping it they made a hole, but seldom, he believed, of any great depth, for with so rude a process it would not be easy to make a vertical perforation. The French had now for many years made the art of deep boring a subject of special attention, and some remarkable works proved the skill and judgment of the French hydraulic engineers. Most people had heard of the well of Grenelle, at Paris, which, passing through the chalk to the green sand, brought to the surface from a depth of 1,798 feet 880,000 gallons of water a day. The more recent boring at Passy, so disastrous to Kind, the engineer, which penetrated to a depth of 1,913 ft., supplied that district of Paris with no less than three and three-quarter millions of pure water daily. This boring was of large diameter—nearly four feet at the top and over two feet at the bottom. The French sinkers adhered to the use of rods for suspending the cutting tool, and this was the mode almost universally practised in this country till Mr. Colin Mather directed his attention to the subject. Mr. Traice described the main features of the French system as carried out by Kind, Chaudron, Drew, and others. The use of wooden poles instead of iron rods appeared to have been an improvement, as also where the escapement contrivances for letting the heavy boring head fall freely without jarring the series of rods, with constant risk of breakage. In France the borer had not only been called in to sound the country to great depths in search of minerals, though here he had rendered great service, for the north-eastern coal-field of France had been virtually discovered and practically explored by bore-holes, but several shafts had been entirely sunk by the boring tool. He would instance the two shafts sunk in this mode at L'Hôpital, in the Moselle, the one being 8 and the other 13½ ft. diameter, and the depth 525 ft. This system, as a rival to that of the ordinary mode by manual labour, generally supposed the only one available for the purpose, appeared to be viewed with great favour in France, and to have sound economy to sustain it—among the French at any rate. Mr. Traice then gave a detailed description of the machinery invented by Mr. Colin Mather, and brought to high perfection by the firm of Mather and Platt. In this system the boring head was suspended by a flat rope, such as was commonly used in coal-pits, and could be set down and wound up as the buckets from a well, avoiding the tedious process of coupling and uncoupling many heavy rods of iron or wood. Steam power was employed for winding, and also for doing the work of the spring pole in giving the stroke to the boring tool. For this purpose a vertical was used to raise the rope and its load, allowing it to fall after the manner of a steam hammer. A very simple contrivance secured the revolution of the tool, so that its cutting position changed with each blow, and guide blocks preserved the vertical direction once determined. The shell pump for raising the *débris* was also so contrived as to be an actual pump, not a mere receptacle as was generally the case. By very simple contrivances, the tubes which it was often necessary to insert to considerable depths to keep the bore-hole intact in loose soils, were jointed flush inside and outside, and were forced down by screw-jacks, or, where greater force was required, by hydraulic rams. In cases where the water did not rise sufficiently high, the necessity for a well to reach it for pumping or winding had been superseded by the invention of a pump that could be let down to any depth, so arranged that there are two bucket valves, wrought by rods from the surface, the rods of the lower valve passing through the hollow rods of the upper one, thus securing a continuous flow of water at the point of delivery. The diameter of the borings was most frequently half-a-yard, and a table referred to by the lecturer exhibited the results of a few of the bore-holes made by Messrs. Mather and Platt's machinery. At Middlesbrough, where a depth of 1,312 ft. had been reached in about a year and a-half, very valuable beds of rock salt had been discovered. At Norwich, a boring of 1,184 ft. had been effected through the chalk, the operation having been embarrassed by the masses of flint encountered; but, notwithstanding these obstacles, the work was completed in about a year and three-quarters. A most interesting case was that of a boring off Gosport, where the Horseshoe Fort is being erected in the open channel. It was desired to produce fresh water for the garrison, and this could only be sought by penetrating through the chalk to the water-bearing strata beneath, it being absolutely necessary to completely shut out the influx of the slightest percolation of salt water. A well of 90 ft. deep had been sunk, lined with water-tight iron pipes, and the boring had already reached 397 ft., its diameter being half-a-yard, followed by tubing forced down by hydraulic rams, and so solidly jointed that, although the beds were not impervious to the sea, not a drop of salt water penetrated to affect the purity of the fresh water of the lower strata. Whether in the formation of artesian wells, the exploring for coals or other minerals, or even the sinking of shafts, there could be little doubt that we could accomplish all that had been done on the Continent, and, probably, with greater economy of time and cost.

CONCRETE MACADAMISED ROADS.

A COMMUNICATION on the above subject from Mr. John Menzies, C.E., appears in the columns of our valuable contemporary the *Builder*, which we take the liberty of reprinting for the benefit of our readers:—

I beg to bring under the notice of your readers a new system of constructing streets with macadamised concrete, invented by the engineer, Mr. Jos. Mitchell, of Inverness. An experiment, extending to 100 yards in length, was made with this concrete, on one of the principal thoroughfares in Edinburgh, three years and a half ago, and although subjected to heavy traffic during that period, the general surface has not worn half an inch. There can be no doubt the result of this experiment has clearly proved that it is the best formation of streets. It is free from dust in summer, and from mire in winter, and carriages running over it produce no more noise than over a well-made macadamised metal road in perfect order. Any irregularities that may occur in the surface can be easily repaired; and where there are gas and water pipes, the concrete can be cast in blocks, and laid over them, and so prevent the necessity of cutting up the surface. Of course the macadamised concrete is more expensive in its original construction than the ordinary macadam; but the saving to the community consists in the total freedom from mud and dust, the easiness of traction, and the saving of constant repairs and consequent annoyance and expense they entail. I wish also to refer to street-making with blocks (which, I think, is not required, except where the declivity is such that there would be a danger of slipping on the concrete), I think it has been proved that, for making durable work, a solid and unyielding bottom is necessary.

An experiment of this kind was also made in Edinburgh at the same time as the above was done. 3 in. of the macadamised concrete was first laid, and the blocks set and grouted with cement, and since then no stone has sunk or worn irregularly, simply for the reason that the beds and joints were set in this concrete, which when set is inflexible and impervious to water. There can be no doubt but the present mode of constructing streets generally adopted is very inefficient and a great waste of material.

Having brought those two modes of constructing thoroughfares with heavy traffic under the notice of your commissioners of paving and their surveyors, I would only suggest, in order to satisfy themselves fully on the subject, that they should see the experiment I have referred to in George IV.'s Bridge, Edinburgh; for I feel confident that some further experiments with this concrete will result in great economy to the public, as well as infinite comfort in the absence of mud and dust.

LAW.

THE LATEST BUILDING CASE—ACTION AGAINST AN ARCHITCET.

COURT OF EXCHEQUER.

(Before Baron Fitzgerald and Special Jury.)

THIS was an action brought by Mr. Andrew Armstrong, a wholesale paper merchant in this city, carrying on business in O'Olier-street, to recover damages from defendant, who is an architect and civil engineer, having offices in Molesworth-street, for alleged negligence and want of skill in preparing plans, specifications, and working drawings for, and in superintending the erection of, a dwelling-house and premises for plaintiff at Temple-road, Upper Rathmines. On the part of defendant it was urged that no architect ever bound himself to specifications; and that in this instance his duties had been faithfully performed. The case was at hearing for five days, and excited considerable attention. Below will be found as lengthened a report as our columns would allow us to present our readers with.

Mr. Andrew Armstrong examined by Mr. Exham, Q.C.—Is the plaintiff in this action; intended to build a house; spoke to Mr. Jones in 1867 about getting the ground; he negotiated the purchase; told him to prepare plans, at an expenditure of £1,500; should have a substantially built house; took home specification and perused it; had a conversation as to a clerk of works: defendant did not think it necessary to have one, as he would superintend the building himself; a draft contract was prepared by plaintiff's attorney, and submitted to defendant; he was to superintend the house until its completion, and to receive 5 per cent. for his services; six tenders were sent in; told defendant that Bolton's had been accepted; defendant preferred that Gahan and Son's should be accepted; asked Bolton to take £150 off, which he refused to do; is certain that defendant was present when the time was fixed; Bolton commenced work soon after the contract, specification, and plans were signed; proves certificates and payments on same; was not in town from the 24th of June until the 16th of July, 1868; on return found a certificate for £700, which I paid next day; never gave defendant any authority to give certificate; the house was not finished in July, nor yet; said I was disappointed; got the plans, and went over the works; cannot remember all the faults I pointed out; defendant promised to have them set to rights by the builder; several letters passed on the subject; proved the receipt of several letters, which were read; in September, 1868, defendant applied for £50; in December observed rain-water coming in various places; the builder said that the roof could never keep out rain, the glass being too thin; wrote to defendant, but got no reply; told defendant that builder should do first coat of paint, and he replied they never did it well; called attention to the brickwork in kitchen range; two plans were prepared for gate-lodge [letter read]; went out on the 26th of March last, with Mr. Findlater; after an interview with the parties, Mr. Findlater suggested that it would be better to leave all matters in dispute to arbitration; defendant subsequently agreed to prepare lists of deviations and omissions, to enable Bolton to put them to rights: Mr. M'Curdy was named as the arbitrator; there was no time specified; took possession on the 27th March; a bill of extras was taxed by defendant; I was present when the kitchen-range was put in; was present when the floors were laid; defendant told the builder's foreman that there was to be an under flooring; foreman replied that it was not in specification; the underpart has been lathed and rendered, but still could see the daylight through the floor; there are two ventilating bricks under north side, but no others; have not yet gone to live in the house; never agreed to rescind the contract.

Cross-examined by Mr. Butt — Bolton's tender was the lowest; defendant was not present when contract was signed; defendant wished to use a form of his own; told him that Mr. Findlater should draw up one; defendant said he would visit the building every morning; he undertook the duties of a clerk of works; all orders for extras were given by me through Jones; did not tell Bolton that I was in no hurry; intended letting house at Bray.

Mr. Arthur Dudgeon examined—Is a surveyor; knows plaintiff; he first spoke to me in latter end of April; went to the building on the 6th of May; had contract plans and specifications; saw the cornice; the work executed is only a facia and soffit; work would require painting, or timber would rot; a cornice as contracted for would be much nicer; the difference in value would be £58 7s. 9d.; no detailed sketch on contract; asked defendant for a tracing of it as originally specified; was told that the detail drawings could not be found; the builder said likewise; met defendant at his office; he said he recollected making a sketch on a board, but had not got it; defendant said he never intended *a cornice*, but only a *bead-mould*; this was after I called his attention to the words in specification; bead-mould would not apply to contract plans; in some cornices bead-mould would be a component part; the cost of taking down cornice and making it conformable with contract would be about £400; conservatory steps not of material specified for, but of granite of a very inferior quality; difference in value about £18; if steps were removed there would be difficulty in supporting porch; probable cost about £150; this includes taking down, and supplying proper granite; sleeper wall not built of rubble masonry, as specified; sufficient number of perforated bricks not provided: examined timber generally through house; handrail is not of St. Domingo mahogany, but of Honduras, which is about half the price; coping stones, &c., &c., not executed as specified.

Cross-examined by Mr. Butt, Q.C.—Prepared model from original specification and draft; cement would not be likely to be injured as easily as wood; made up the difference in prices thus: as executed, £23 13s. 11d.—as estimated, £82 1s. 8d.; defective ventilation under ground floor arises from only two air-bricks being put in walls.

Mr. Charles Geoghegan examined by Mr. M'Laughlin.—Has been an architect for many years; examined the works, with the plans and specifications; considers the detailed calculations made by Mr. Dudgeon quite correct; it would be an expensive job to take down and alter cornice; no builder following the specification would prepare a building such as that executed; two air bricks would not afford sufficient ventilation; the granite is not best Ballyknocken or Co. Wicklow—it is rough and of bad colour; should be removed; steps laid on dry rubble, and not on sleeper walls, as specified; landing on top of steps in six pieces; effect of entire works that they were done much cheaper.

Mr. W. G. Murray examined by Mr. Exham—Is an architect; examined house with Geoghegan and Dudgeon; cornice not executed according to plans; timber cornice liable to rot, even if painted; thinks Dudgeon's calculation of expense about right; the granite in steps is of bad colour, and stained; Co. Dublin granite is much cheaper than Co. Wicklow; in order to carry out the specification it would be necessary to remove the steps; joints of steps opened, owing to a defective foundation; side wall sunk—should be pulled down; landing steps should always be large—those used here being merely flagging; ceiling not panelled; no plinths to doors; insufficient supply of air bricks; bricks not expensive; never recollects putting up such a cornice as this.

Mr. Samuel Robinson examined by Mr. Exham.—Is a builder of experience; saw the house at Temple-road; the granite used is of an inferior quality to that specified for; the steps should not have sunk [reads letter of July 26th, 1867]; air bricks were requisite; damp smell arose from under part of floor; a current of air would remedy this; thinks the mahogany is Mexican.

Mr. MacDonogh, in a lengthened address, opened the case on behalf of defendant.

Mr. A. G. Jones, examined by Mr. Butt, Q.C.—Is the defendant in this action; was employed in January, 1867, to prepare plans; did so under instructions from plaintiff; had six interviews with him; Bolton was selected by plaintiff; saw Bolton on 21st June as to contract; plaintiff accepted tender, and directed Mr. Findlater to prepare a contract; went away on the 9th July; on draft contract I pencilled some changes, which I thought should have been carried out; during my absence the foundations and two or three feet of walls had been built; there was no clerk of works employed; told plaintiff there was no necessity for employing a clerk of works; his salary would be £3 or £4 per week; employer always pays for him; an architect never employs a clerk of works; visited the works fifty-six times; the building was completed two months before time agreed on; plaintiff suggested several alterations from the plans; changed floors of conservatory, vestibule, and billiard-room by substituting better description of tiles; attended to take possession; never gave a final certificate; never accepted house as finally completed; gave six certificates; made no special memoranda when giving them; satisfied myself that the work had been done; on the 9th of July Bolton asked for final certificate, as the works were complete, and said he was entitled to it; told him I had not finally examined the works, or his account, and refused to give him final certificate; two drawings were made; one of them, which was condemned, Bolton got; model is not accurate, as bead-mold is much larger, and the cornice altogether larger; work altogether does not correspond as executed; furnished detailed drawings; has no copy; model gives an idea of cornice; that executed is a bolder and better one than that contemplated; deducted £10 on account of bead-mold not being completed as contracted for; the cornice was put up while roofing was in progress, and under my superintendence; plaintiff was present; his attention was called to the bead-mold, and its form and shape explained; he said it would look very nice; did not tell him of the difference in plan; cornice would cost more than Dudgeon says; cement would require painting same as wood; considers eleven air bricks sufficient for entire building; did not consider a counter floor necessary in such a house; approved of solid masonry under steps; portion of the granite is from Co. Wicklow; quality not up to the specification; plaintiff said the stones were excellent; their colour now not good; washing would make them all right; top step of landing is of one stone; quality good, although not the best Ballyknocken; could not condemn coping.

Mr. Bolton examined—Is a builder; tender accepted for this house; went to work before contract was signed; extra works have been executed; more works have been done than specified; keys given to caretaker before contract completed; contract finished on the 1st of July; no previous demand made for penalties; first heard of them about time when Mr. Findlater interfered; Dudgeon was employed as measurer; furnished account in July; subsequently furnished my total claim at £3,648 0s. 10d; £333 balance due to me; work cost £340 more than I got; it is honestly done; saw no joints of steps opened; marks of crowbar on disturbed steps; the granite was had from a place adjoining Co. Wicklow; last week saw pier blocks discolored; defendant saw the stones before they were put up, and plaintiff saw them frequently; first complaint after Dudgeon went out; offered to remove them; the subsequent trenching of garden would affect foundations of house; cannot find detailed drawing of cornice furnished to me; coping larger than specified; three defective stones; not bound to put in bracketting to inside cornice; air bricks specified for upper floors only; kitchen drops down to level, and cannot have ventilation on that side; no white timber in house; no counter-flooring specified; under floor lathed and rendered in addition to specification; mahogany used is Mexican; could get St. Domingo as cheap; got sixth certificate, and was paid the amount on presenting it to plaintiff's cashier; complaints afterwards forwarded to me by defendant.

Cross-examined.—Painters were at work in the house until November, 1868; knew steps were not according to contract; orders given for Co. Dublin granite by foreman; staircase not in first instance completed as specified; mahogany not as contracted for; there is no settlement in steps; pointed them; cannot swear there is a drain within fifteen feet of foundation; foreman made out the estimate on which I tendered; never read the specification; bead-mold supports only itself; there is a fair amount of ventilation under ground floor; canuot say if cornices are properly carried out; is not delaying completion of works; architect should not have deducted £10.

Mr. J. S. Mulvany examined by Mr. Macdonogh, Q.C.—Has been an architect for 36 years to Midland Great Western Railway, &c.; examined house with Jones, Bolton and E. Armstrong; drawings prepared with skill; house to be a third-class house; work carried out as well as I ever saw in my life; in a manner far above that specified; roof of billiard-room constructed very judiciously; works would not be injured by leaving them for 20 months; saw 11 air bricks; they are properly placed; would not introduce them unless near ground floor; no evidence of shrinking in timber; would use Honduras mahogany in first-class houses; the cornice is a first-class job; no man of sense would attempt to put up such a thing as the model—a monstrous piece of nonsense; foundations constituted of rubble, tar, and mortar; flooring remarkably well done.

Cross-examined by Sergt. Dowse.—Except granite, materials of best description; can describe what a first-class house is; "landing" not a correct name, should be "portico;" sashes in billiard-room should have been painted; thought the wet which came in was produced by condensation; granite used neither Ballyknocken nor Co. Wicklow; not according to specification; joints imperfect from settlement; air bricks objectionable in upper rooms; specification should have provided for rendering, or counter-flooring; would not insist on St. Domingo mahogany, although specified.

Mr. George Moyers examined by Mr. Butt, Q.C.—Has had considerable experience as a builder; examined house early this month; steps built on sufficient foundation; external cornice very suitable; same as appears on plan; constructed in the usual way—sound and proper; granite good and sound, although a little coarse; the house is well built; can get St. Domingo mahogany same length as Honduras.

Mr. John M'Curdy examined by Mr. Macdonogh, Q.C.—Went over house with Dudgeon's report; is a fairly constructed building; drawings prepared with skill; one length in handrail appears like St. Domingo mahogany—the others not fitted for the purpose; the model of cornice is an exaggerated one—does not represent one; cornice as executed not up to what was intended, though preferable to model; the one as contracted for would look much better; rubble masonry under the steps; better than sleeper walls.

Cross-examined by Sergeant Dowse—St. Domingo mahogany is a better class of material; it would have been downright lunacy to put up a cornice like that in specification; bead-mold a substantial variation; house would have looked better if bead-mold larger; little additional expense.

Mr. T. N. Deane examined by Mr. Butt, Q.C.—Cornice put up not same as on plan; bead-mold not a good job; it is superfluous, and too projecting; cement and lathing likely to rot; foundation to steps good; sketch on specification not according to scale.

The evidence having closed, counsel on both sides addressed the jury in lengthened speeches.

Baron Fitzgerald, in charging the jury, said that this was a very unusual action, indeed of an unusual nature, and it behoved the jury and himself to be very careful about what they were going to do. What he should endeavour to do, as well as he could, was to give them his own view of the real question which they had to try. In substance the action was a complaint that the defendant had been guilty of a breach of duty. The defendant was employed by the plaintiff as an architect to prepare plans and specifications, and to superintend the execution of those plans and specifications, for the dwelling-house of the plaintiff. It appeared to him that when the defendant accepted this employment he came immediately under the obligation to exercise, both in the making of the plans and specifications, and in the superintendence of the work, reasonable care, diligence, attention and skill; and if there had been any default on his part in that superintendence, from which actual damage had arisen to the plaintiff, then the defendant was responsible. When the defendant had prepared his plans and specifications, an estimate was made by the builder, Mr. Bolton, for carrying into execution the plans and specifications which the defendant had so prepared, and was accepted by the plaintiff, Mr. Armstrong. In accepting that estimate the plaintiff instructed his solicitor to prepare a draft of the contract between him and Mr. Bolton for performing the work according to those plans and specifications, and according to such additional drawings as might thereafter be prepared by the defendant, and according to such explanations and directions as the defendant might give. Now, that is the whole contract; but it contained other very material provisions, all of which assume the superintendence of the defendant, and give to the defendant, as between the plaintiff and Mr. Bolton, power and authority, so that, in fact, without the defendant's intervention in the performance of the contract by Mr. Bolton, the contract could never have been performed by him at all. They would observe that he was to be guided and regulated by Mr. Jones's directions. When, therefore, the defendant accepted the actual superintendence of the working of the contract by Mr. Bolton, it seemed to him perfectly clear that the superintendence of the works in accordance and in conformity with the terms of the contract. If that were not so, the performance of the contract by Mr. Bolton would be impossible. It was only under the defendant's direction that certificates could have been paid, and therefore without him the performance of the contract would have been impossible; and when he assumed that superintendence it seemed to him clear that the obligation applied itself to the contract, and it became an obligation on the defendant to superintend the works according to and in conformity with the contract. But still they must remember that this was entirely a different thing to becoming a party to the contract himself. The duty of the defendant was a duty of superintendence, and nothing more; but it was a duty which applied to the contract, and to be exercised with the powers and regulations, and so forth, given to him by the contract. Remember, then, that the defendant was not the contractor with the plaintiff to do the works at all; neither was he contracting to ensure the doing of them by Mr. Bolton. He entered into no such contract at all; nor, on the other hand, was there a contract between him and Mr. Bolton which would give him direct legal power to compel Mr. Bolton to perform the contract. In that view of the case it was wholly unnecessary for him to call their attention particularly to the distinctions between the first four counts, the only differeuce being that the first two set forth the obligation generally, and the other two applied the same obligation to the superintendence of the contract. It seemed to him that there was abundant evidence to sustain each of these four counts in their peculiar form. He would, therefore, direct them to find for the plaintiff on the first four counts. The question would then arise, was there a failure in the due, skilful, and attentive performance of this duty of superintendence on the part of the defendant; and, if there were, what actual damage accrued to the plaintiff thereby? A very serious question arose upon the contract. It appeared that for the completion of the whole works Mr. Bolton was to be paid £3,224 9s. 9d. The mode of payment was to be by instalments, but the right to receive any instalment could only be conferred on Mr. Bolton by the defendant's certificate given under his hand, certifying that work had been done to the amount of £250 at least. Then he was to be paid seven eighths of the amount so certified. It was also provided by the contract that none of the certificates should be given unless the work was done to the satisfaction of the defendant, and in conformity with the contract. There was to be a final certificate, however, which would be conclusively binding on both parties—that was, on Mr. Bolton and the plaintiff. The allegation of the plaintiff was that the defendant was responsible for want of due care, attention, and caution in the giving of these certificates. That allegation was the subject of the other three counts which they had to consider. The contention of the defendant was that he was only to be held responsible for an honest and *bonâ fide* performance of his superintendence, not independent of care and skill. That appeared to him to be a question deserving of much consideration, but for the purpose of determining between the parties in the shortest and most inexpensive mode, he should ask them to treat it as that the defendant was responsible for the want of care, skill, and attention in the performance of his duty. If he was wrong in that he would be set right; but, in the meantime, he would ask them so to treat it. It they found that there had been want of reasonable skill, care, and attention in the superintendence of the works, then would arise the question of what actual damage arose to the plaintiff from this default of the defendant in this duty of superintendence. The measure of damages could not by possibility be what would be necessary to put the work in the condition required by the contract—that would be as against the party who was paid for the performance of the work: but now the damages should be measured as to what loss the plaintiff had suffered by reason of the negligent performance of his duty of superintendence. It appeared six certificates had been given—1st, 27th April, 1867, for £500; paid £437 10s. 2nd, 31st December, 1867, £500; paid £437 10s. 3rd, 1st February, 1868, £500; paid £434 10s 4th, 5th March, 1868, £1,000; paid £875. 5th, 11th April, 1868, £500; paid £437 10s. There was certified in all £3,000, out of which had been paid £2,625. On the 9th of July, 1868, the 6th certificate was given for £500 on the contract, and £300 for extras, together £800, out of which the sum payable was £700. Now, as to the giving of the 6th certificate, it was given *ultra vires*, and the plaintiff could have refused to pay it—he was not compelled by the powers of the contract to pay it. It would be almost impossible to say that the giving of the certificate was not a gross want of caution, and very negligent to say the least of it. Now, the plea of the defendant was that this certificate was given by the leave of the plaintiff. It was a question whether this plea ought to have been allowed, but for the purpose of the present trial it was not necessary to consider it. It would be impossible to say that he did not pay this, with full knowledge that £2,625 had been already paid, and he or his attorney had the actual possession of the draft of the contract by which he was apprised that he was not compelled to pay, and yet he (Mr. Armstrong) made no complaint until February, 1869. He had now gone through the questions they had to try, and as they were as familiar with the evidence as he was, it was unnecessary for him to review it.

His lordship then left the following questions to the jury:—

1st.—Were the houses and premises at Temple-road in any respect built of inferior or insufficient materials, or erected in an unskilful or unworkmanlike manner, or permanently injured or diminished in value, or were any deviations or omissions from the plans and specifications made?

2nd.—Were they or any of them made or done by the authority or permission, or by reason of want of reasonable, skill, care, and attention of the defendant in his superintendence of the works?

3rd.—The damage arising to the plaintiff from such default of the defendant in said superintendence?

4th.—Whether the certificates, or any of them, were given to the builder in respect of works which were not done to the satisfaction of the defendant, or according to the contracts?

5th.—Whether the certificates, or any of them, were given to the builder without taking into consideration deviations and omissions made by the builder in the work, and without making any deductions in respect thereof from the unit mentioned in such certificate or certificates?

6th.—Whether the giving of such certificate was by reason of the negligence and want of caution of the defendant in his duty of superintending the works?

7th.—The damage thence arising?

8th.—Whether the 6th certificate was given through negligence and want of due caution on the part of the defendant in superintending the work?

9th.—Whether the plaintiff, with full means of knowing the default of said 6th certificate, acquiesced in and adopted the same?

The jury, after deliberating for an hour and a-half, handed in a verdict, with an answer in the affirmative to each question, and assessing the damages on the 2nd and 3rd questions at £75, and on the 5th, 6th, and 7th questions at £5, with 6d. costs,

Counsel for Plaintiff—Messrs. Sergeant Dowse, M.P., Q.C.; Exham, Q.C.; and M'Laughlin. Attorney, Mr. Wm. Findlater. Counsel for Defendant—Messrs. Macdonogh, Q.C.; Butt, Q.C.; G. Fitzgibbon, and Cleary. Attorney, Mr. W. Fry.

THE SANDBAG FOR INFANTRY.

THE recent improvements effected in arms of precision, have rendered it necessary to accustom the infantry soldier to the use of the spade and pick for the purpose of throwing up field works and entrenchments, and thereby to secure shelter, when required, from the rapid fire of the breechloader. Captain Harcourt, 102nd Fusiliers, has made the following suggestion :—That a sandbag and trowel form part of the equipment of every infantry soldier. Entrenchments may be of two kinds, natural and artificial, moveable and immoveable; the sandbag being easily carried and capable of being rapidly filled and still more rapidly emptied, comes under the head of an artificial and moveable entrenchment or means of cover and protection. Length of sandbag to be 20 inches, breadth 14 inches, with a strong tape sewn on at about 4 inches from its mouth wherewith to tie it firmly when filled. The bag when filled measures about 15 inches in length and 10 in breadth. The trowel to be shaped like an ordinary garden trowel, weight about 1lb. The men's haversacks might be so constructed as to form an additional sandbag in cases of emergency.

The following trials have been made with the sandbag at the rifle range, Lucknow. The bag was filled with earth and tied at the neck firmly, and to test its efficacy in resisting the penetration of an Enfield rifle bullet, it was fired at by a man lying down at a distance of fifty yards from it. The bullet struck the bag in the centre, but did not penetrate beyond about six inches; on opening the bag, the bullet was found flattened into the shape of a mushroom. The bag was placed on the ground with its mouth inwards and end towards the man who fired; by so placing it, greater resistance to the bullet is obtained, and a sufficiency of cover is afforded. To ascertain at what distance a man lying down behind the sandbag would be invisible to another in front of him, a serjeant proceeded down the range and found that at 100 yards the man was entirely concealed. He was equally hidden from a man on horseback at 150 yards. Two bags were then placed close together, and it was ascertained that at 400 yards they had the appearance of a small clod of earth, at 500 yards they were distinguishable and no more, and at 600 yards they could not be seen at all. Lastly four men were paraded, each with a sandbag and trowel in addition to his rifle, to test the time they would take to get under cover. The ground on which this trial took place was extremely hard, with short stubbly grass growing on it. The men fell in, in two ranks, and although the drill was new to them, as was also the handling of the trowels, yet in five minutes the bags were filled and placed, and they were under cover. They a second time went through the drill, and took but three minutes to get under cover. With a little practice men could with ease entrench themselves in a couple of minutes or less, especially in a ploughed field, or where the earth was ordinarily soft. The bags when filled are naturally heavy, but not so heavy as to prevent their being easily carried backwards or forwards with ease on the men's shoulders in a change of front. This suggestion comprises a moveable entrenchment which can be rapidly formed and be still more rapidly demolished and packed away, either in the men's haversacks or trowser pockets. —*Broad Arrow.*

CORRESPONDENCE.

WORKMEN'S INTERNATIONAL EXHIBITION.

WE have been requested by the Hon. Secs. of the Workmen's International Exhibition to give the following communication a place in our columns. We earnestly hope that steps may be taken to have our Irish art-workers duly represented at the meeting on the 10th inst :—

TO THE EDITOR OF THE IRISH BUILDER.

SIR,—The Council of the Workmen's International Exhibition, to be opened on the 7th of July, 1870, at the Agricultural Hall, Islington, has determined to hold a conference of delegates from the towns of the United Kingdom and of other countries, on the 10th of January next, at the rooms of the Society of Arts (in John-street, Adelphi), which have kindly been lent for that occasion.

The day's business will begin at ten a.m., and will be distributed as follows :—

1.—Statement and discussion of the proposed method of arrangement of Exhibition.

2.—Statement and discussion of the proposed system of prizes, and appointment of jurors.

3.—Discussion on the opening of workshops in the Exhibition.

4.—Reports, statements, and suggestions from local committees.

5.—Statement and discussion as to the means to be adopted to make the Exhibition promote the interests of technical education.

Mr. Mundella, M.P., and Mr. S Morley, M.P., will successively occupy the chair during the day's sitting.

The conference will be brought to a close at four p.m., and all the delegates are invited to meet the Council at dinner (Mr. T. Hughes, M.P., to preside) at 5 30.

In the evening a public meeting will be held at eight p.m., at Exeter Hall, at which Prof. Huxley will preside, if it should be impossible for the president (the Right Hon. W. E. Gladstone, M.P.) to be present.

The following resolutions will be moved :—

1.—That the principles laid down in the prospectus of the Workmen's International Exhibition of 1870, which required the worker's name to be attached to the article produced, are both just and useful, as tending to give workmen their share in the credit of production, and to increase the pride and interest which attaches to skilled labour.

2.—That it is of the highest importance to develop amongst all the people a true perception of what is beautiful in colour and form, and a scientific knowledge of the machinery and material employed in existing industries; and this meeting pledges its best exertions to promote the success of the Workmen's International Exhibition of 1870, as a valuable instrument to this end.

3.—That the trade knowledge and aptitude for combination shown by workmen who can produce for a Workmen's Exhibition an article requiring many different kinds of labour, deserve the encouragement of every class, as the first step towards greater and more important kinds of co-operation.

4.—That it is in the interest of all nations that each should stimulate the other in the development of their highest productive powers, the prosperity of every people requiring continual progress in the cultivation of human faculties, and that perfection of method and machinery which yields the largest return to the day's labour.

We ought to add that the Council strongly hopes that all towns in this and other countries will lose no time in calling together a public meeting, and appointing delegates to attend the conference. Such delegates must be appointed by public meeting, and we shall be extremely glad to receive as early as possible the names of those who will attend. The Council are especially desirous that co-operative, trade, benefit and other societies, and workmen's clubs and institutes. and large workshops will also send delegates on this occasion. We are directed to request that all such societies should put themselves in communication with us, and to assure them that their representatives will be gladly welcomed. The Council will provide accommodation for the night of the 10th of January for those delegates who wish them to do so, and will otherwise do all in their power to facilitate the attendance of their visitors, on receiving communications on the subject. We would therefore urge, not only our own local committees, but all those who are interested in the carrying out of a Workmen's International Exhibition, to take immediate steps for calling together a meeting of their fellow-townsmen for the purpose of making better known the character of the undertaking, to appoint committees where they are not already in existence, to multiply the number of intending exhibitors, and to appoint delegates to the conference.

AUBERON HERBERT.
THOMAS PATERSON.
J. W. PROBYN.

FRESH DISCOVERIES AT POMPEII.

ARTISTIC and antiquarian news is brought up to me from Naples by our southern winds. It is not much, but will interest your readers who may have visited Pompeii. Only a fortnight has elapsed since I reported important discoveries that were made in the buried city under the direction of its indefatigable director, the Commendatore Fiorelli; now,—that is, during last week,—other interesting discoveries have been made near the site where the jewels and coins were turned out about three weeks since. They consist of five musical instruments, says the *Naples and Florence Observer,* a kind of clarionet, one half of silver and the upper part and mouthpiece of ivory. They are in an excellent state of preservation, and have been deposited in the Museum, in the room of small bronzes.

The Catacombs of Santa Maria of Capua are to be opened on the 27th inst. You will remember that some objections were made by the municipal body of that place as, some two or three hundred years ago, those who had died of the plague were buried there. The most eminent medical men of Naples having, however, pronounced all fears to be groundless, the municipality have yielded. The attention of artists is much directed to the coming event, as pictorial treasures are expected to be brought to light. Returning to Rome, the journal I have quoted above speaks of the present from a priest, Don Mariano Matticini, of Rimini, as being the most remarkable that has yet been received by the Pope. It consists of a bell, designed and executed by himself, for his Holiness to make use of at the Œcumenical Council. The substance is bronze gilt, and the decorations which enrich it are all allusions to the Council. The handle is formed of a kneeling angel bearing a cross—the papal cross and pastoral, the Pope's arms, tiara and keys. The hammer represents the mystic barque of St. Peter, with a cross reversed for a mast, and a smaller cross for the helm, whilst a serpent tries in vain to enter into the sacred craft. Several inscriptions are interspersed amongst the festoons which divide the ornaments. Could this have been the bell which the Cardinal Delegate De Luca used last Friday to call to order several members of the Second Congregation of Fathers assembled to choose their officers? The Roman journals are lavishing praises on the Pontiff for finding time in the midst of affairs of state and exertions for putting the world in order, for the promotion of Art and of Archæological inquiries. Pius the Ninth has just given orders, says the Correspondence, to recommence the excavations which have been suspended on that part of the Palatine belonging to the State, and has expressed a wish that Signor Visconti should undertake the direction of these interesting operations. Last Monday week, in fact, the work was begun on the side of the Palace of the Cæsars which looks towards the Circus Maximus, a point already marked by very important discoveries, but which leaves still certain interesting difficulties to be solved. Unfortunately the water of the Tiber during the last few days has risen above the ridge or road which Visconti had constructed to defend the Emporium. The waters, however, will retire on the approach of fine weather. As to the excavations of Ostia, they are also to be recommenced.

From Naples I hear that the archæological fever is extending so rapidly in the South that in several provinces, as Terradi, Lavoro, Salerno, and Naples, commissions, each to consist of twelve persons, have been formed for the purpose of advancing the work of excavation. Four members are to be chosen by the Government, and eight by the province. In Terra di Lavoro at least, and perhaps in all, these operations are to be freed from the restrictions by which they have been shackled hitherto, and an annual grant of 6,000 lire will be made for aiding the good work.

On Tuesday evening died the celebrated sculptor, the Commander Pietro Tenerani, Born in Carrara in the year 1798, he came when a youth to Rome, where he devoted himself to Art. He was Director-in-Chief of the Pontificial Galleries and Museums, of the Gallery and Museum of the Capitol, and President of the Academy of Fine Arts, bearing the name of St. Luke. On Thursday night his remains were taken with great pomp from his residence to the church near the Fontana de Trevi, and Rome offered distinguished honours to his memory. The procession was by torchlight; from forty to fifty carriages followed, and the Via Condotti was for some time impeded by the great concourse of people.

Another great artist has thus passed away, whose name has been for many a year a household word in the mouths of residents and visitors. Who that ever came to Rome, did not visit the studio of Tenerani! It was a kind of artistic Loreto, and not to have made a pilgrimage to see the works of the disciple of Thorwaldsen was almost to have committed a breach of the religious observance of Art. By Italians he was considered at the head of his profession, but Tenerani belonged rather to the past than to the present. In his finish and execution he was unrivalled, and in these he far surpassed Thorwaldsen, but in grandeur and boldness of conception he was much inferior to his master. Among his works were the monument to Pius Eighth, in the Sacristy of St. Peter's, in which some think that he has excelled his master, by whom the Tomb of Pius the Seventh was executed; the graceful group, 'Love plucking a Thorn from the foot of Venus,' which is, I believe, in the collection of the Duke of Devonshire; 'Fame Playing on a Pipe,' executed for Count Schoeborn, of Bavaria; 'Psyche Sorrowing,' for the Imperial Palace at St. Petersburg; 'The Genii of Hunting and Fishing,' for Prince Corsini; 'Colossal Statue of St. John,' for the Church of S. Francesco de Paola, at Naples; Colossal Statues of 'S. Alphonso Liguori,' in St. Peter's; and of 'S. Benedict,' for St. Paul's; 'Sepulchral Monument of Count Orloff'; 'Vulcan and Venus,' for Prince Torlonia; monuments to the Marchioness of Northampton, to Count Giulio Bauche, and to a Polish Princese, in Liverpool; also a basso-relievo—'Three Daughters of the Duke of Abercorn'; and a group—'Sons of Lord Carnarvon.'—H. W. in *Athenæum*.

NOTES OF WORKS.

Alterations and additions are being made to the premises 13, North Wall, which have been recently taken possession of by the British and Irish Steam Packet Company for their new stores and offices. There is a frontage towards the river of 31 ft., with a total depth of 160 ft., which will afford ample accommodation for goods' store and clerk's offices. The first floor of front building will be devoted to a board-room, secretary's office, with bookkeeper's department, waiting-rooms, lavatories, &c. The contract has been taken by Mr. Samuel Robinson, Westland-row, under the direction of Mr. Charles Geoghegan, architect, Great Brunswick-street.

Plans are in preparation for sundry alterations and improvements at St. Edmondsbury, Lucan, the seat of William Moran, Esq. The principal front of the mansion (which, with the conservatory, extends 227 ft.) will be increased in height by the addition of an open balustrade, with ornamental arches over central windows. The lower windows will have cornices, consoles, and French casements filled with plate-glass. The roof will be furnished with cast-iron crestings of neat pattern. The interior will be remodelled and decorated. This fine mansion, originally the residence of Lord Perry, the last speaker of the Irish House of Commons, was planned on a scale of unusual magnitude; it contains seven grand reception-rooms, fourteen sleeping apartments, &c., &c. It stands on an eminence overlooking the windings of the River Liffey, with magnificent views on all sides. The house and farm-offices will be lighted with gas manufactured on the premises. Mr. C. Geoghegan is the architect.

In a former number under this heading we stated that improvements of an extensive and elaborate character were about being made at the drug establishment of Messrs. Hoyte and Son, Lower Sackville-street. These improvements are now complete, and this worthy and old-established firm have a concerns second to none in the city, for the carrying on of their daily-increasing trade. In every department—shop, cellarage, and warehouses—great changes have been wrought, and no expense has been spared in the providing of mechanical appliances for the convenience of customers. The building, situated at junction of Sackville-place and Lower Sackville-street, has been well designed for its purpose, and presents a large range of frontage. The pillasters on principal front are of granite from Mr. J. Brady's quarries, Ballyknocken. The architect was Mr. Joseph Maguire, of 201, Great Brunswick-street; Mr. G. Carolin, builder.

The new warehouse of Messrs. Cramer and Co., Musicsellers, Westmoreland-street, has been opened. Mr. W. G. Murray, Lower Gardiner-street, was the architect; Messrs. Crowe and Sons, Great Brunswick-street, the contractors.

MISCELLANEOUS.

Soldiers' Graves in the Crimea.—Some correspondents of the *Times*, who have recently returned from the Crimea, describe the present condition of the cemeteries and graves of the troops who fell in the memorable siege of Sebastopol. They say they found the walls of the enclosures and the monuments they contain crumbling and melting away in every direction. This arises partly from climate, partly from violence. The stone of the country is very soft and friable, and soon yields to wet and frost, while many monuments which have been sent out from England by affectionate relatives consist of floriated crosses and other delicate work in marble, which exposure to the weather soon shatters and demolishes. But violence has done much more mischief. The Tartar peasants in the neighbourhood have a notion that valuables are buried with the dead, and consequently rifle the graves. An Englishman told us at Sebastopol that his servant once, when out shooting, came upon some Tartars actually engaged in exhuming a corpse for the sake of plunder. Again, a distinguished officer who fell at the Alma is buried under a large altar-tomb; the Tartars, imagining the corpse is above ground, inside the raised part, have ruthlessly destroyed the monument in their endeavours to discover treasure. Iron railings, too, are carried away for the sake of the metal and of the lead which fastens them. Contrast this with the French and Russian cemeteries. The French have collected their dead into one large cemetery, laid out the ground neatly, put a guardian at the gates, and built a series of monumental chapels, which, though questionable in taste, are, at all events, solid and durable, and show that a great nation is not prevented by distance from remembering the duties of civilisation. The Russians, again, have deposited their dead in one large cemetery in pits, covered with sloping masses of stone which seem indestructible by weather or violence. The ground, which is a slope commanding a view of the country, is disposed ornamentally, and the most conspicuous monument is a marble bust, under a canopy, of Prince Gortschakoff, the Russian Commander-in-Chief during the war, who, though he died at Warsaw, in 1861, desired to be buried among his former comrades in arms. A memorial chapel is almost completed, where continuous service will probably be performed, and which will be richly decorated with Italian marble and mosaics.

Mr. Joseph Maguire, architect, 201, Gt. Brunswick-street, has been appointed agent to the estate of the Rev. C. Alderson, near Templemore, Co. Tipperary. From Mr. Maguire's professional abilities, we feel certain that a good selection has been made.

The last Proposal for Uniting England and France.—A French engineer, M. Eugene Burel, has been in England to explain his plan for shortening the distance between England and France. He has nothing to do with bridges over the sea, or tunnels under it, but would simply improve it off the face of the earth; in other words, fill up the Channel on both sides, and reclaim the land, leaving only a passage a mile wide to be traversed by ferry-boats every five minutes M. Burel is a grave, serious gentleman, and really believes in his scheme, whatever our readers may think of it. With the best possible feeling we advise M. Burel to waste no money on the prosecution of his scheme We will not venture to say what changes in opinion may take place one of these days, but at the present moment England has no desire to give up her insular position.—*Builder*.

A Fortunate Sculptor.—Gibson was put to school in Liverpool, where he got into trouble with his master and favour with his fellow-scholars, for drawing, instead of attending to his lessons. But his good luck predominated even in these early days, for the stationer of whom he bought his materials lent him drawings to copy, talked to him of the Academy, and generally, gave him ideas that he could not have picked up in his little Welsh home-circle. Then he was apprenticed to a firm of cabinet-makers, who ultimately allowed him to cancel his indentures, and placed himself with Mr. Francis. He had been but a few months employed in his workshops, when Mr. Roscoe visited it, to order a chimney-piece for his seat, Allerton; and his drawings and models being shown to that friend of art, his kind encouragement commenced. After this, to use a North-country phrase, Gibson never once looked behind him: all was progress with him. His route was pointed out, as we have seen; funds furnished him, and Liverpool, London, and Rome were only so many successive stages to the road that had been trodden by the Greeks; and his adoption of colour in later life was only carrying into effect his ingrained creed that "Whatever the Greeks did was right." Friendly hands were held out to him in many directions from the first. Dr. Vose instructed him in antomy gratuitously; the family of Mr. Solomon d'Aguilar cultivated his mind; John Kemble sat to him; Mrs. Siddons and Sir Thomas Lawrence lauded his work, and many copies of it were sold; in London, Mr. Christie, the auctioneer, introduced him to fresh supporters. Fuseli, West, and Flaxman all gave him the strongest encouragement. Flaxman confirmed him in his desire to go to Rome; but Chantrey disapproved of it, saying there was everything in London requisite for the education of a sculptor. Arrived in Rome, Canova received him as a pupil, giving him instruction for five years; and Thorwaldsen greeted him as a friend, and whenever Gibson modelled a new work, came to him and corrected whatever was amiss. Canova advised him to study the Greeks, and to frequent the studios of the other sculptors, "and especially go as often as you can to that of Thorwaldsen: he is a very great artist." This he was enabled to do by virtue of the custom of the sculptors in Rome to visit one another, criticising or admiring work in progress. By and by people came to view his work in like manner. He records first a visit from the Duke of Devonshire, in 1819, who tapped at his door and told him Canova had sent him to see what he was about.—*Builder*.

The Council of the British Association have appointed a Committee to draw up a Report on Metric Standards, keeping in view a communication on that subject received from Prof. Jacobi, of St. Petersburg. The Imperial Academy of Sciences in that city have made known their opinion that the continuance of the errors at present existing among the standard metric weights and measures of the different countries of Europe and of the United States "would be highly prejudicial to science." These errors, though small in amount, are nevertheless fatal when regarded from the scientific point of view, and the Academy being of opinion that no private labours, however meritorious, would suffice for the required rectification, recommend that an international commission should be appointed to consider the question. Hence the appointment of the Committee of the British Association may be regarded as a preliminary step to the nomination of some competent person or persons to act on the proposed commission on the part of England. Should the report of the Committee be favourable, an attempt will doubtless be made to obtain the aid of Government in carrying on the affair. Prof. Jacobi has laid the question before the Academy of Sciences at Paris, who, as we hear, have expressed their willingness to co-operate.

We understand that the new telescope to be used as refractor or reflector, constructed for the Royal Society by Grubb & Son, of Dublin, will be ready for trial by the end of the present year. It was ordered last July, and those who know anything of the operations required for the production of a large and perfect instrument will understand that the manufacturers have not been idle. Mr. Huggins is building his observatory to suit the telescope, and we expect in the course of the coming year to hear of his making spectroscopic discoveries by aid of the new appliances.

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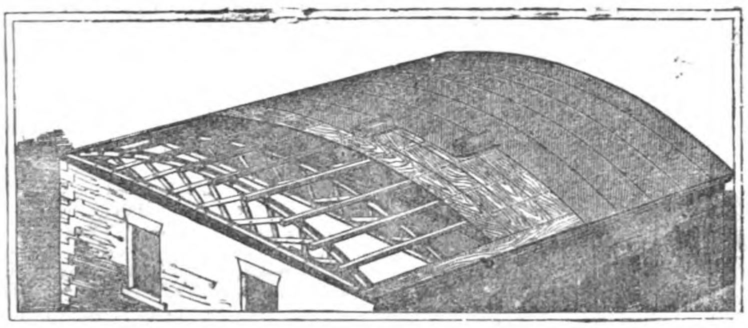

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The Irish Builder.

VOL. XI.—No. 242.

Excessive Charges for Water in the City.

SEVERAL of the leading manufacturers in the city met on Friday at the Commercial Buildings, Dame-street, for the purpose of protesting against the enormous high rate charged for water supplied by meter for manufacturing purposes.

The memorial to the Corporation adopted by the meeting set forth the disadvantage under which Irish manufacturers laboured owing to the high price of fuel, and urged that the price charged for water should not exceed that at which it could be supplied without loss. In order to estimate what this price might be, the memorial stated that memorialists understood that the contract for the Pembroke township was for 20 gallons per head per day for a payment of 8½d. per £1 of public valuation, which is now £66,337 10s. The population being 20,000, the Corporation water-rent was therefore £967 8s. 5d. per annum, or £2 13s. per diem, for 400,000 gallons, being at the rate of 1s. 6d. per 1,000 gallons; also that the Blackrock township water contract was only 1.84d. per 1,000 gallons. The memorial further stated that it appeared officially that 17½ million gallons per day were delivered from the reservoir at Roundwood; 2d. per gallon on this would yield £53,229, which, after paying all expenses and interest on loans, would provide a good profit for the liquidation of debt; and under these circumstances the memorialists submitted that a charge of 3d. per 1,000 gallons would amply protect the interests of the ratepayers, and that any higher price would be prejudicial to the commercial interests of the city. The memorial also gave a table showing the average charges in several English and Scotch towns. From this it would appear that the Dublin charges exceed the average in the towns mentioned as follow:—For 70,000 gallons, excess of the Dublin price, 37 per cent.; 100,000 gallons, 38 per cent.; 200,000 gallons, 47½ per cent.; 400,000 gallons, 46½ per cent.; 700,000 gallons, 34½ per cent.; 1,000,000 gallons, 80½ per cent.; 1,500,000 gallons, 18½ per cent.; 2,000,000 gallons, 1½ per cent.; 5,000,000 gallons, 9½ per cent. The memorial concluded by stating that, even if water were supplied at the old rate of about 1d. per 1,000 gallons, still the high price of fuel would prevent memorialists having any advantage over their competitors.

The enormous increase in the burden of the water-rate was illustrated by several examples, which are startling in the vast disproportion which they exhibit. Twenty years ago, when the city was supplied from the canals, the whole rate of the city was stated by Mr. Sweetman as £10,000 or £12,000. Last year it was £38,000 or £40,000. In many instances manufacturers have now to pay from ten to fifteen times as much for the same quantity of water. Mr. Brown gave a specimen of the sort of encouragement which they received when he stated that, even at the rate of 3d., he would have to pay a tax of £551 a-year, and Mr. Draper mentioned that the firm to which he belongs would have to pay £232 a-year, instead of £49. Such facts as these naturally suggest the question whether it is the deliberate policy of the Corporation to strangle the manufacturers of Dublin in the cradle.

THE NEW STATE CAPITOL AT ALBANY, N.Y.

THE site of the new Capitol is very commanding, being about 170 ft. above the level of the Hudson, and has an area of ten acres. It is bounded on the south by State-street, and on the north by Washington-avenue, 100 ft. in width; as the land falls off rapidly to the north, south, and east, this building, with its high walls, still higher pavilions, turrets, and towers, will appear to great advantage.

In the exterior composition of the design there is a general adherence to the style of the pavilions of the New Louvre, of the Hôtel de Ville of Paris, and the elegant Hall or Maison de Commerce recently erected in the city of Lyons. Without servile imitation of any particular example, the architects have endeavoured to produce a composition in the bold and effective spirit which marks these most admired specimens of modern civil architecture.

The terrace, which forms the grand approach to the east or principal front, will form an item of striking architectural detail, nowhere, we believe, yet attempted on such an extensive scale in America. The exterior is 290 ft. long north and south, and 390 ft. east and west.

The floor immediately above the level of the plateau of the terrace will be entered through the porticos on Washington-avenue and State-street, and through the carriage entrance under the portico of the east front. The first or main entrance floor will be reached by a bold flight of steps on the east front leading to the loggia or entrance hall, occupying an area of 60 ft. by 74 ft. and 25 ft. in height. Communicating directly with this hall are two grand staircases, which form the principal means of communication with the second and most important floor. On the left of this hall are a suite of rooms for the use of the Governor and his secretaries and military staff. On the right are rooms for the Secretary of State and the Attorney-General, with corridor leading to the Court of Appeals.

On the second or principal floor will be placed the Senate and Assembly Chambers and the State Library, all of which will occupy the height of two storeys, making 48 ft. of height. Rooms for the committees, and other purposes, will also be placed upon this floor. The Senate Chamber will have an area of 75 by 55 ft., with a gallery on three sides of 20 ft. in width. The Assembly Chamber will be 92 by 75 ft., and surrounded by a similar gallery, which in both chambers largely increases the areas of the upper portion.

The library will occupy the whole of the east front of these two storeys, and will be 283 ft. long and 54 ft. wide. This will be the most attractive room in the building, and, it is believed, in the world. Its large area and lofty proportions, its views towards the north, east, and south, overlooking the city, and bringing in the valley of the Hudson and its western slopes for miles in each direction, will make it a favourite place of resort at all seasons of the year.

The main tower is 66 ft. square, and about 320 ft. in height. In the centre of the building will be an open court of 137 by 92 ft. This court will be a grand and attractive feature, being treated in the same manner as the exterior fronts, and will no doubt ultimately have its fountains and be surrounded with statuary.

The plans of the foundations have been prepared with great care. The entire structure will weigh 150,000 tons; but the marked inequalities in the heights of the various walls, and the distribution of the enormously heavy fire-proof floors, and roofs sometimes laden with deep snows, bring very unequal weights upon the parts of the foundation adjacent to each other, and without this great care they would settle unequally. The stone foundation of the walls commences on concrete, and is made of large blocks of close-cut limestone of from two to six tons weight, laid in regular courses, the first one of nearly the width of the concrete, and narrowed by offsets to the width necessary to support the superstructure.

The architects are Messrs. Fuller and Laver, of Albany, and Mr. W. J. McAlpine is the engineer.

AN IRON RAILWAY CARRIAGE.

A NEW cylindrical iron railway carriage for passengers, has just been patented by Mr. W. N. Macartney, of 98, Hutcheson-street, Glasgow. It is made of wrought iron firmly rivetted in the form of a cylinder, partaking more or less of a complete circle in its cross section, this shape being the strongest into which a given weight of metal can be put. The doors may be made in the side, but they are arranged, as most suitable, in each end, opening out unto a platform, which, when the train is in motion, serves as a means of communication through all the carriages. The openings for the windows are in the same position as in ordinary carriages, and the seats can either be made across or along the carriage. In either case, owing to the slightly increased breadth, a passage is left from one end of the carriage to the other. The iron plates of the carriage, owing to the circular shape, require little if any framework, and the few ribs necessary are utilised for ventilation. All the interior is cushioned, except the floor, with non-conducting and non-combustible material. Stoves are provided for heating—two surrounded by hot air-jackets being suspended under the car, with pipes passing into the car under the floor, which are so arranged as to keep up a continuous double circulation of hot air, warming the entire carriage. Notwithstanding the great strength of the carriage itself, the platform is utilised as a great collision buffer; the roof is extended over the platform, and while serving as a cover is also a buffer, on the same principle as the platform underneath. For his invention the patentee claims many advantages. In case of collision, for example, even if the violence was so great as to overcome the resistance of the buffers and of the car body itself, there would be from the iron of the carriage no splinters. The carriage, moreover, is incombustible. So far as railway companies are concerned, an iron safety carriage, according to Mr. Macartney, would not cost any more than an ordinary car, and would hold as many passengers, while its weight would not be more than a car of the same size made of wood. The circular shape of the roof would, when the wind was blowing on the side of the carriages, hinder such an amount of friction against the rails as is produced by the wind blowing upon the high sides of the box-shaped carriages, impeding progress, and cutting up the rails. The cost of keeping the iron carriages in repair, he adds, would be less than the wooden ones, they would last longer, and when useless as a carriage, the iron would be valuable for use again.—*Colliery Guardian.*

NEW BELL FOR CHRIST CHURCH, LISBURN.

A VERY fine-toned bell has just been supplied to the above church. It was cast in the foundry of Messrs. Curtis and Sons, Middle Abbey-street, and weighs over 12 cwt. The reputation enjoyed by this firm as bell-founders, for so many years, will be creditably sustained by this their latest sample of home production. The bell bears the following inscription in raised characters:—

"This Bell was erected to the glory of God,
A.D. 1869,
By the Congregation of Christ Church, Lisburn,
and other friends.
The Rev. Wm. Dawson Pounden, A.B., Incumbent.
Redmond Jefferson and Holt W. Lindsay, Churchwardens."

PRINTING IN CHINA.[*]

EVERY newly ascertained fact respecting printing has an importance for the world; and although the progress of the art in China is entirely unconnected, we believe, with its progress in Europe, it is interesting to know what the Orientals had already done in the way of the multiplication of works of art at a time when monks in the West were toiling at the reproduction of manuscripts.

Klaproth, in his treatise on the Compass—*Mémoire sur la Boussole*—says that the first use of wooden blocks for printing dates from the middle of the tenth century of the Christian era. He says, "Under the reign of Ming-tsong, of the dynasty of the later Thang, in the second of the years Tchanghing (932 A.D.), the ministers Fong-tao and Li-yu proposed to the Academy Kouc-tseu-kien to revise the nine King, or canonical books, and to cause them to be engraved on blocks in order that they might be printed and sold. The Emperor adopted the proposition: but it was not until the time of the Emperor Thaï-tsou, of the dynasty of the latter Tcheou, in the second of the years Kouang-chun (952 A.D.), that the engraving of the King was accomplished. They were then published and distributed throughout all the cantons of the empire." The same author adds: "Printing, originating in China, might have been known in Europe 150 years before it was discovered there if Europeans could have read and studied the Persian historians; for the method employed by the Chinese is pretty clearly explained in the Djemma'a el-tewarikh of Râchid-eddin, who completed his immense work about the year 1310 A.D.

The subject has again come before the world through the labours of M. Stanislas Julien and M. Paul Champion, a chemist, who has spent some time in China in order to compare the industries of that country with the accounts found in native works, and to give the European world a practical and scientific account of the methods there employed. Their work is entitled 'Industries Anciennes et Modernes de l'Empire Chinois, par M. Stanislas Julien, accompagnées de Notices par M. Paul Champion,' &c. (Paris, Lacroix).

MM. Julien and Champion go beyond M. Klaproth, and say that Europeans might have known printing 860 years before they did had they been in relation with China a few years before the commencement of the seventh century. With the process then known, imperfect as it was, it would have been possible to reproduce, at small cost, the master-works of Greek and Roman antiquity, and to have preserved a great number from the loss that is now irreparable.

If this be true, engraving on wood for the reproduction of text and drawings in China is infinitely more ancient than has been hitherto believed. The proofs are numerous. In the Chinese Encyclopædia, 'Ke-tchi-king-youen,' book xxxix. fol. 2, is the following passage:—"In the eighth day of the twelfth month of the thirteenth year of the reign of Wen-ti, founder of the dynasty of the Souï (593 A.D.), it was decreed that all drawings and texts in use should be collected and engraved on wood in order to be published." "This," adds the Chinese author, "was the commencement of printing by means of wooden blocks; and it will be seen that it occurred long before the epoch of Fong-ing-wang or Fong-tao, by whom it is said to have been invented about the year 932 A.D."

According to a Chinese encyclopædia, entitled 'Po-t'ong-pien-lân, book xxi. fol. 10, which cites an earlier work, called 'Pi-tsong,' printing with wooden blocks commenced in the reign of the Souï as early as 581 A.D., advanced sensibly under the Thang (618 to 904 A.D.), increased rapidly under the five petty dynasties (907 to 960), and reached its full development, under the dynasty of the Song, between 960 and 1278. Now, supposing that the Chinese authors quoted did not all draw upon their imagination for the facts in question, this is startling evidence. Another Chinese writer, who lived in the middle of the eleventh century of our era, says positively that the invention of printing by means of wooden blocks dates back full 400 years before the time of Fong-ing-wang, to whom many Chinese writers, and Europeans after them, have attributed it. It appears, indeed, that it was already known and in use before the year 593; for in that year the Emperor ordered certain things to be printed without anything being said about the art being new.

Between the invention of wooden blocks for printing and that of moveable types came printing from stone,—an invention believed to be unknown hitherto to the missionaries and *savants* of Europe. As early as the middle of the second century of the Christian era, it was the custom in China to engrave ancient texts on stone tablets in order to guard against the errors that crept in through the carlessness or ignorance of scribes. In the biography of Tsaï-yong, in the annals of the latter Han, is the following passage:—"In the fourth year of the period Aï-ping (175 A.D.) Tsaï-yong presented a memorial to the emperor, praying him to cause the text of the six canonical books to be revised, corrected and settled; it was subsequently written by the memorialist himself, in red characters on stone tablets, and able artists were employed to cut away all the blank portion of the stone, leaving the characters in relief. These tables were placed without the doors of the grand college, and the *literati* of all ages went daily to consult these tablets in order to correct their copies of the precious books." Of course, there was originally nothing in these tablets more connected with printing than in the Egyptian obelisks or the Damietta stone. Their object was simply the preservation of the sacred writings.

Towards the end of the Thang dynasty, about the year 904 A.D., the idea of using stones for reproduction arose, and texts were cut for this purpose, with the characters reversed. In this case the proceeding was the opposite to the former, the characters were incised, and, consequently, the printing was white on a black ground. The practice of printing from wooden blocks, had, it seems, either never been largely practised or had fallen into disuse, for Eou-yang-sieon, in his archæological treatise, entitled 'Tsi-kou-lo,' says that during the troubles which arose after the extinction of the Thang dynasty, Ouen-tao opened the imperial tombs and possessed himself of the manuscripts and paintings inclosed there. He appropriated the envelopes and rouleaux, which were of gold, studded with precious stones, but left the documents where he found them; and thus the autograph manuscripts of the most eminent men of the Weï and Tsin dynasties, which the Emperors had preserved with religious care, were lost or fell into unworthy hands. But this accident, like so many others, was productive of important results, for in the eleventh month of the thirteenth year of the Chun-hoa period (992 A.D.) the Emperor Thaï-tsong decreed that all the manuscripts which could be recovered by purchase or otherwise should be engraved on stone and printed. The mode employed at that time was, after the stone was inked to lay the paper upon it and pass the hand over the back of the sheet; at present the Chinese use a brush for the same purpose, and thus produce far more perfect impressions.

No record seems to have been found of the manuscripts thus reproduced; but in the cyclopædia entitled 'Tchi-pou-tso-tch'aï' is embodied a work in two books, in which is a minute description of all the antique inscriptions and autographs of celebrated men reproduced in the manner described, that is to say, in white on a black ground, between the years 1148 and 1243 of the Christian era.

The practice of printing from wooden blocks seems to have been abandoned for a time, for we are told that from the period when Fong-ing-wang printed the five books of the King on stone that process was adopted for the publication of all legal and historical works.

We now arrive at another step in the development of printing. In the period King-Li, between 1041 and 1049 A.D., according to the book last quoted, a blacksmith, named Pi-ching, invented a method of printing with what were called ho-pan, or blocks composed of type. This word "ho-pan" is used at the present day in the imperial printing-office at Pekin for the forms used in that establishment. The method adopted by Pi-ching is thus described:—He made use of fine adhesive clay, which he formed into small regular cakes as thin as the pieces of money called Thsien, and on these he engraved the characters most frequently in use; and these types he burned in fire to harden them. A sheet of iron was placed upon a table, and covered with a coat of very fusible mastic composed of resin, wax and lime; an iron form, with vertical divisions to form columns, according to the Chinese mode of writing from the top to the bottom of the page, was laid upon the prepared iron plate and kept in position by the mastic; the types were then arranged close to each other in the columns, and when the whole of these were filled the form was carried to the fire, in order to soften the cement, then returned to the table, when the types were forced into the mastic uniformly by means of a flat piece of wood, precisely like the planer in use for a similar purpose at the present day, and the face of the type was as equal as that of an engraved block of wood or stone. Two forms were used at the same time, so that as soon as a sufficient number of impressions had been taken from one page of type another was ready to complete the sheet, which then, as now, in Chinese printing contained only two pages of printed matter and both on the same side, the sheet being folded in half with the double edge outwards for binding.

Pi-ching multiplied his types sometimes to the extent of twenty; and the duplicates not in use were kept carefully wrapped up in paper. The types were classed according to the tonic arrangement; and each class had its own particular case. When a character occurred that had not been previously prepared, a type was engraved, and, being dried by means of a straw fire, could be used immediately. The reasons given for the inventor not having used wooden types are, that the tissue of wood is hard in one place and soft in another, and that when wetted it becomes uneven; and further, that, when once in contact with the cement, wooden types could not easily be removed, whereas with terra-cotta types, the moment the form was done with and the iron plate warmed, they could be swept off with the hand without a particle of the mastic or even a stain remaining upon their surfaces.

When Pi-ching died his companions, or partners, inherited his types, and preserved them with great care; but the invention fell out of use. And this is not surprising when we consider the nature of the Chinese language, for, in order to be able to print all kinds of works, it would have been necessary to have 106 cases, that being the number of sounds in the tonic arrangement. It was easier and more expeditious to paste the text down on the surface of a block and cut out the whites with a graver, as is practised at the present day. From the death of Pi-ching down to a comparatively recent date, the Chinese seemed to have adhered constantly to this system of block-printing, but using for superior work copper-plates instead of wood.

It was not until after 1662 that another change took place. In the reign of the Emperor Khang-hi certain missionaries, who enjoyed credit with that monarch, induced him to cause 250,000 movable types in copper to be engraved, which were used for printing a collection of ancient works, which formed 6,000 volumes, in 4to. This edition is admirably printed, and some of the works composing it are to be found in European libraries. Some years afterwards these types were all melted, and it took a century to replace them.

In the year 1773, the Emperor Khien-long decreed that 10,412 of the most important works in the Chinese language should be engraved on wood and printed at the cost of the State, but the Minister of Finance, Kin-kien, seeing the enormous number of blocks that would be required and the immense expense that would be incurred, succeeded in persuading the Emperor to adopt the system of movable types, and submitted models of those required, arranged on sixteen plates and accompanied by all the necessary instructions for the cutting of the dies, the striking of the matrices, the founding of the type, and the composition. The ministerial proposition was adopted, and the works were ordered to be printed. A catalogue, descriptive and *raisonné*, published by imperial order and bearing the formidable title of 'Ssekou-thsiouen-chou-tsong-mo-ti-yao,' gives a full account of the above-mentioned works, and fills 120 vols. 8vo. This catalogue, which is to be found in the Bibliothéque Impériale of Paris, also contains a narrative of the undertaking.

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[*] From the *Athenæum*.

The result of the decree was the establishment in the Palace of Pekin of an edifice known as the Wou-ing-tien, in which a considerable number of works were printed every year by means of movable types, which received from the Emperor himself, it is said, the elegant appellation of tsiu-tchin, or assembled pearls. The editions there printed are of remarkable beauty. Unfortunately the establishment has recently been burnt down.

The official report which precedes one of these editions records a fact which may serve as a hint to Europeans. Our steel punches and copper matrices are exceedingly costly and liable to rust and oxidation. The Chinese have escaped both these evils by cutting their punches, or rather dies, in a fine-grained hard wood, the cost of which is between a halfpenny and a penny per type, and produce their matrices in a kind of porcelain: these are afterwards baked and from them are cast the types in an alloy of lead and zinc, sometimes mixed with silver. The justification of matrices composed of such material would seem a very difficult matter, on account of the shrinking in the fire, but works printed with types thus produced exhibit perfect regularity. Even if such matrices be unfitted for small type, it is possible that they might be found all-efficient for large and special characters.

Such is the history of the revolutions which the art of multiplying documents has undergone in China during some twelve centuries. At the present day, printing by means of movable types is making its way gradually in that country, and probably before long the use of wooden blocks will be discontinued. Many important works have issued from private presses; amongst others, 'Wout-hsien-heou-pien,' a treatise on the military art, in twenty-four volumes; 'Li-taï-ti-li-yan-pien,' a tonic dictionary of the names of towns, in sixteen volumes, 4to.; 'Haï-koué-thou-tchi,' a descriptive geography of the globe, from Chinese and European sources, in twenty volumes, 4to. These editions are far from rivalling those of the imperial press, but they are well executed, and more correct than those obtained from wooden blocks, as the Chinese printers, in using movable types, have naturally adopted the European system of proofs and revises.

LIBRARY OF REV. DR GIBBINGS.

The Rev. Dr. Gibbings has presented to the University his large and valuable library of theological works, the collecting of which has been the work of many years' study and labour. It is not the number of the volumes—although this must be considerable, seeing that their total weight is about ten tons—but the singular rarity of a large proportion of them, that constitutes the value of the gift. The library includes a complete set of the Benedictine Fathers, a great number of the *editiones principes* of the Fathers, and of mediæval writers, and all of Luther's works, as published originally by the Reformer himself, from A.D. 1517 downwards. One of these works contains an authentic woodcut likeness of Luther. There is also a fine and uniform collection of the same works, as published subsequently, in seven folio volumes. We observed also in the library a superbly printed and bound folio volume containing the works of St. Dionysius, in Greek and Latin, and also the Commentary of Druthmar on the Gospel of St. Matthew. Druthmar was a monk of Corbey, who lived in the ninth century, and his work, printed for the first time in 1514, is directed against the doctrine of Transubstantiation, which the author contends is a novelty in his day. Of this book there are not more than two or three copies extant. A still more interesting volume is a small folio printed at Rome in 1475, and written by Æneas Sylvius, who afterwards became Pope, under the title of Pius II. The volumes in this noble collection are substantially, many of them magnificently, bound. The oldest of them are of a date ten or fifteen years prior to Caxton's labours in England. At this date books used to be published without title-pages or publishers' names; a short table of contents was sometimes printed in the middle of the first page, and the date at the bottom of the last. Dr. Gibbings has presented his collection under such conditions as will greatly enhance its utility. He has not consigned it to the College Library, where it would probably repose undisturbed on the shelves along with the well-intended bequests of many another book-collector, but has attached it permanently to the chair of Ecclesiastical History, the occupant of which for the time being will require it, and will have it precisely in the place where he wants it. The library, while available to all, shall be specially convenient to those who are certain to want and really likely to use it. The books are to be placed under the care of three trustees—viz., the Professor of Divinity for time being, the Professor of Ecclesiastical History, and the nearest living representative of the donor. We observe that the donation, though made last November, is not referred to in the College calendar for 1870, under the chapter headed "Benefactors of Trinity College." This is somewhat surprising, as the calendar professes to be corrected down to the 10th Dec., 1869. The new calendar contains, however, the correction of an error contained in the preceding ones respecting a valuable collection of manuscripts purchased by the late Dr. Wall from Dr. Gibbings in 1854, and presented by the former to the Library. The previous calendars represent Dr. Gibbings as not being the owner of the MSS. in question, but only an agent in purchasing them for Dr. Wall. Dr. Gibbings purchased them, more than a year previous to his disposal of them, from an English nobleman, who had himself bought them from a French officer, into whose hands they had fallen during the plunder of Rome by Napoleon I.

THE NEW BANK OF IRELAND, LONDONDERRY.

The building recently erected in Londonderry for the Bank of Ireland, was opened for business on Monday, 3rd inst. It stands in Shipquay-street on the site of premises formerly occupied by Messrs. M'Connell, wholesale grocers. The façade presents a pleasing elevation. The style of architecture is Italian, freely treated. The first storey has a bold and effective dentil cornice, supported by elaborately-carved trusses and pilasters. Over the cornice there are five finely-executed heads. The windows in this storey have circular heads, bold archivolt mouldings, and sunken and moulded spandrils. On second storey the windows have square heads, and the dressings consist of pilasters, trusses, and segment entablatures. The windows of the third storey have segment heads, with plain architrave dressings. The material used in principal front is Glasgow stone. The windows are filled with plate glass; those of the public office are secured with patent revolving shutters. The ground floor comprises the public and private offices, strong rooms, lavatories, w.c.'s, &c., all suitably fitted and furnished. On the upper floors are apartments for the agent. The kitchen, servants' apartments, and porter's room, are in the rere of the building. A residence for the sub-agent has been provided on the portion of the site facing Magazine-street. The plans were prepared by the architect to the Bank, Sandham Symes, Esq., F.R.I.A.I., Lower Dominick-street, Dublin. The works have been well executed by Messrs. G. and R. Ferguson, Pump-st., Londonderry.

THE PRESERVATION OF HEALTH.

In the course of a paper on the above important subject, read before the "Armagh Natural History and Philosophical Society" by Dr. J. L. Riggs, the following observations were made by the learned gentleman:—The leading conditions essential to health are: first, a constant supply of pure air; second, a sufficiency of nourishing food, rightly taken; third, cleanliness; fourth, sufficiency of exercise for the various organs of the system; fifth, proper temperature; sixth, sufficiency of innocent enjoyment, and exemption from harassing cares. Speaking of the process of nutrition, he said it is a law of vital action that when any living organ is called into play, there is immediately an increased flow of blood and nervous energy towards it. So great is the demand the stomach thus makes upon the rest of the system, that during and for some time after a meal we are not in a condition to take strong exercise of any kind. Both body and mind then become inactive and languid, because that which supports muscular and mental energy are concentrated for the time upon the organs of digestion. This arrangement of nature should not be interfered with. We should indulge in the muscular and mental repose demanded, which should last for not much less than an hour after any regular meal. In that time the new nutriment begins to tell upon the general circulation, and we are again fit for active exertion. The non-observance of this rule is often very hurtful. Active exercise or mental application immediately after a meal diverts the flow of blood and nervous energy to the stomach, and the process of digestion is retarded or altogether stopped. Confusion and obstruction are thus introduced into the system. For the same reason that repose is required after a meal, it is necessary in some measure for a short period before. At the moment when we have completed a severe muscular task, as a long walk, the flow of nervous energy and of circulation is strongly directed to the muscular system. It requires some time to allow the flow to subside, and till this takes place, it is not proper to bring the stomach into exercise, as the demand it makes when filled would not be answered. In like manner, if we be engaged in close mental application, the nervous energy and circulation being diverted to the brain, it is not right all at once to call another and distant organ into play—some time is required to allow the energy and circulation being prepared to take the new direction. It is remarkable that these rules have been followed with regard to animals on which man sets a value, while as yet their application to the human constitution is thought of only by a few. Those entrusted with horses and dogs will not allow them to feed immediately after exercise, nor will they permit them to be exercised for some time after feeding. There has been a gradual improvement in the public health in Europe within the last two hundred years. In London in 1606 the annual mortality was 1 in 14; in 1838 it was 1 in 35. One hundred years ago, the deaths of children in London were twice as numerous as at present. It has been ascertained that during the last century about one-third has been added to the average population of life, that is to say, an individual has now as good a chance of living forty years as he had then of living thirty. The improved condition of the people is the cause of this remarkable change, and there seems no good reason why this improvement should not be still further extended.

BARRACKS FOR THE ROYAL IRISH CONSTABULARY.

WE give as an illustration in the present number a couple of views of the design for second-class barracks for the Royal Irish Constabulary, upon which design several buildings of a similar character will probably be carried out for that service in different parts of the country under the Commissioners of Public Works in Ireland.

EDUCATION FOR THE WORKING CLASSES.

WE have before us the syllabus of a course of evening lectures to be delivered at the Royal College of Science by Robert Stawell Ball, A.M., commencing on the 7th February next, the subjects of which are adapted for machinists and engineers, and also to all who are interested in constructive and operative carpentry in connection with building.

We are to suppose these lectures are intended, at least partially, for the benefit of the artizan class, and to them, we imagine, they ought to be of much importance, only that there exists a nearly practical prohibition to their attendance,—in this we mean that, in their favour at least, as being a Government institution, the admission should be free; there are few artizans who can afford to spare five shillings occasionally from their weekly earnings for the purpose of attending lectures; therefore, to be useful, it becomes absolutely necessary that a portion of the lecture-hall should be open gratis to them upon written recommendations of manufacturers and employers. This could have no effect in excluding the better classes, who would gladly avail themselves of a moderate charge in reserved spaces. Things are differently managed on the Continent, where the polytechnic schools are always crowded by those they are intended to benefit; and we consequently find amongst them, in larger proportion, a much more intellectual and better regulated class than we can boast of. We have been led into these remarks by the perusal of Mr. Scott Russell's book, published by Bradbury and Evans, London, on technical education, in which he endeavours to shew, and cites numerous authorites to prove, that England is being sadly distanced in the competitive markets of the world by the manufactured products of other countries, all of which he attributes to the want of even ordinary education amongst the working classes; and in support of this view he quotes the evidence of those who ought to be the highest authorities, and who all agree in the one great fact, that it is the result of the superior education attainable by the working classes of our continental neighbours. In giving his numerous authorities in every department of industry, he dwells forcibly upon the superiority of continental manufactured iron as well as every other product in which England formerly stood prominent; and throughout the entire of the large mass of evidence he produces, it is distinctly shewn that all this is owing to the ignorance of the English workman, which is described, "both primary and industrial, as frightful," and that on the Continent a workman who cannot read or write is never met with, but, on the contrary, the majority of them can do so with a familiarity which enables them "to enjoy reading and conduct correspondence in the most creditable style," so much so that they advance considerably beyond those who are their superiors in social standing. Mr. Russell treats largely upon building, which he designates, in contradistinction to general manufacturing businesses, as "a higher craft or profession;" and we will content ourselves for the present with making but one extract from the numerous evidences he gives with regard to our inferiority in the education of the working classes of these countries,—it is that of Mr. Connolly, a stonemason, which, in itself speaks volumes. He says—"The Frenchman's familiarity with art, and his early training in its principles, enable him to outstrip us; and as every building in Paris is more or less decorated with carving, you are at a loss to know how they get all their art-workmen; but this difficulty would not appear so much if you could read the large placards, in French, which are posted up at the ends of the bridges and other public places, informing workmen where they can be taught drawing and modelling every evening free of expense. That he outstrips the Englishman in this respect does not arise from the possession of an especial art-genius, but whatever of it is in him is fully developed, and encouragement is given to its practice."

It sometimes occurs that we meet people who still persistently believe in the antiquated notion that education for the working classes, if not altogether unnecessary, is frequently an injury; in fact, that it unfits them for the position they are intended to occupy, and makes them so discontented with their station in life, that instead of being a blessing to them it is the reverse. Possibly, with aboriginal man, wandering in nomadic tribes over desert wastes, through primeval forests, or over boundless prairies, this argument may, in a measure, hold good; his wants are few, and easily supplied; civilized life and its teachings mean to him annihilation, and with him "ignorance is bliss;" not so, however, in the great communities of the world, divided as they are into numerous unequal proportions, where each individual or national community is struggling for pre-eminence over those of other countries. He whose stalwart arm drives the chisel, the hammer, or the saw, works the loom or tills the earth, is by no means the least worthy of their component parts; and the more you give him facilities for instruction, the more you elevate the great masses of society of which he is a member, and after all its bone and sinew, and one of its chiefest supports.

The late Lord Brougham, the great pioneer of teachings for the working classes, once said, "By education men become easy to lead, difficult to drive, easy to govern, but impossible to enslave." So intuitively convinced of the truth of the latter portion of this remark were the colonists and their descendants in the now great American Republic, who, as if they intended to foreshadow this fundamental truth, which would be enunciated in the future by one of the greatest of the apostles of civil liberty, made it penal to instil even the first rudimentary principles of learning among their bondsmen; and although schools in abundance existed all over the Union, the African serf, by the sweat of whose labour gigantic fortunes were built up, was wholly debarred from their influences. We do not mean here to contrast the position of our working classes with that of the quondam American slave, nevertheless, the same principle applies to both; because all infringement upon, or neglect of, great precepts or natural laws bears with them their own punishment. Colossal fortunes are also reared through the instrumentality of the former, therefore they should not be considered as mere machines, but part and parcel of one great intellectual and industrial mass, and educated accordingly.

Wherever civilization prevails there are people who will be educated in a measure. Those to whom education is really useful, where proper opportunities are wanting, will, as far as means exist for doing so, be self-taught; and these are the men to whom it becomes a blessing,—not, perhaps, so much to themselves, but to the community generally. But self-teaching only exists in a degree,—the blind cannot lead the blind,—therefore it cannot reach very much farther than rudimentary principles without extraneous aid. It may be argued, if you educate all the great masses of the population in the higher branches of science and of art, who is to do the labour. But this bears with it its own contradiction, because it is an impossibility. Take, for example, 100 different individuals, give each of them the same facilities for knowledge, some of them will learn with avidity, others will never reach beyond its simplest forms, while of the great bulk, possibly but one in ten will, after a period, only know how to read and write; therefore this argument is fallacy.

We cannot complain much at the present time of the want of facilities for primary education. We have in our national system means of acquiring knowledge which the middle classes, let alone the operatives of a past generation, could never hope to reach. But we want something more; we require in addition the free, or comparatively free, teachings of the polytechnic schools of the Continent, where the *ouvrier*, in his blouse, is made acquainted with the great principles upon which the foundation of all industrial pursuits rest; and these he never can attain unless he is, in the first instance, primarily grounded in all the acquirements which are now, and but recently, within his reach.

In Ireland we have but little manufacturing activity, yet that little requires to be stimulated. There are countries in Europe with far less surface and much smaller populations than ours, yet their products are carried over the entire globe. We see no reason why ours should not be also, when nurtured and assisted by free industrial training for our working classes, which we hope to see at no distant day accomplished.

LAW.

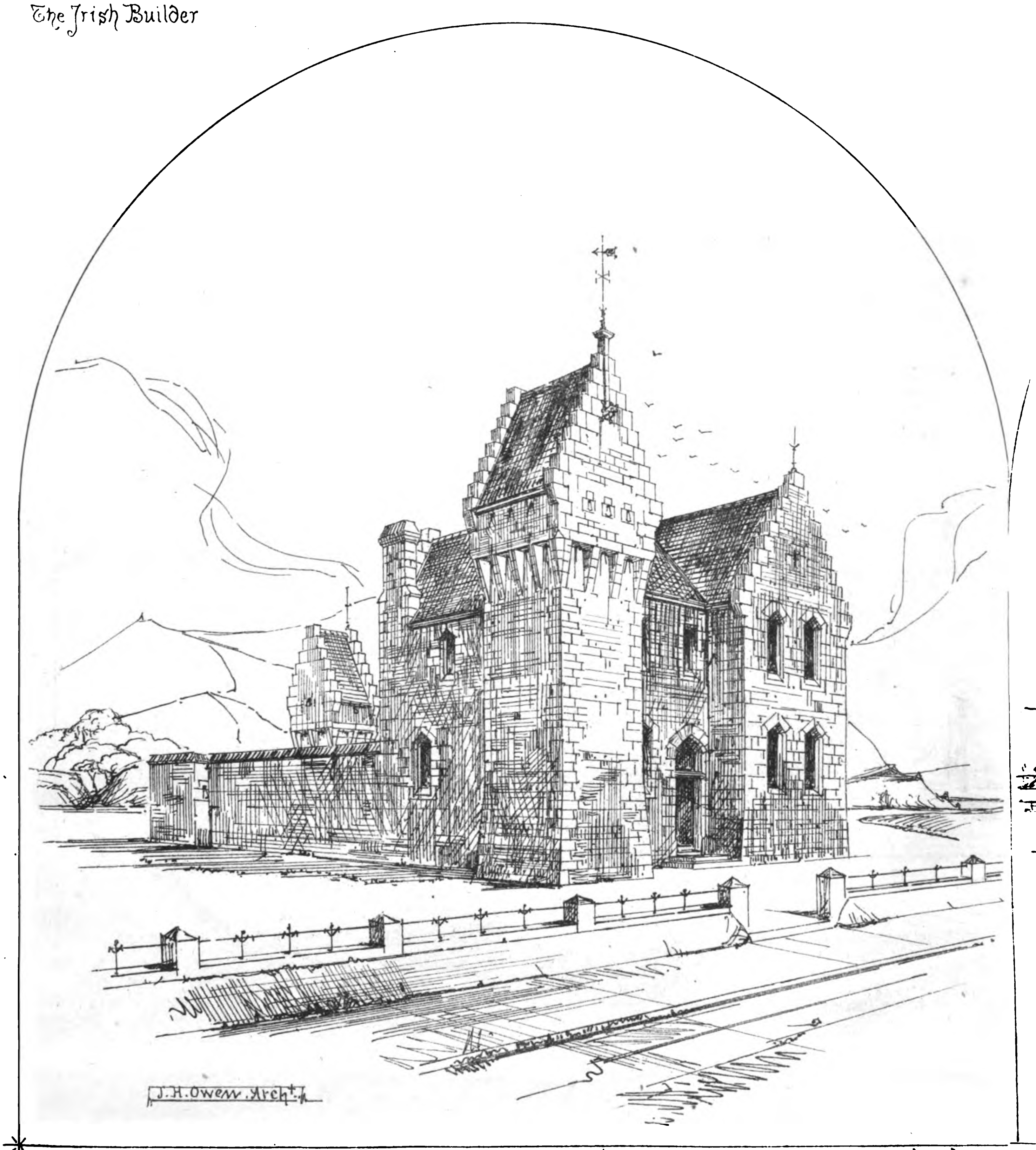
COURT OF COMMON PLEAS—JAN. 13.

A BUILDING SURVEYOR'S FEES.

Thomas Taylor v. *Hall and Son.*—This action was tried before Chief Justice Monahan and a special jury at the last Trinity After-Sittings, when a verdict was given in the plaintiff's favor. A conditional order was subsequently obtained by the defendant, pursuant to leave reserved to change the verdict had for plaintiff into a verdict for the defendant. The plaintiff is Mr. Thomas Taylor, a building surveyor carrying on business in this city; the defendants are Messrs. Hall and Son, builders, also of this city.

Judge Morris delivered the judgment of the Court—The action was brought by a building surveyor to recover £45 3s. 9d. for work and labour, &c., done by him in taking out in detail the measurements and quantities upon plans prepared by Mr. William Fogerty, an architect, for the purpose of enabling builders to calculate the amount for which they would execute certain works at Dundrum Castle, the residence of Mr. Walsh. It appeared that the plans prepared would have involved an outlay of over £2,000, although Mr. Walsh intended to lay out no more than

The Irish Builder


J.H. Owen. Archt.

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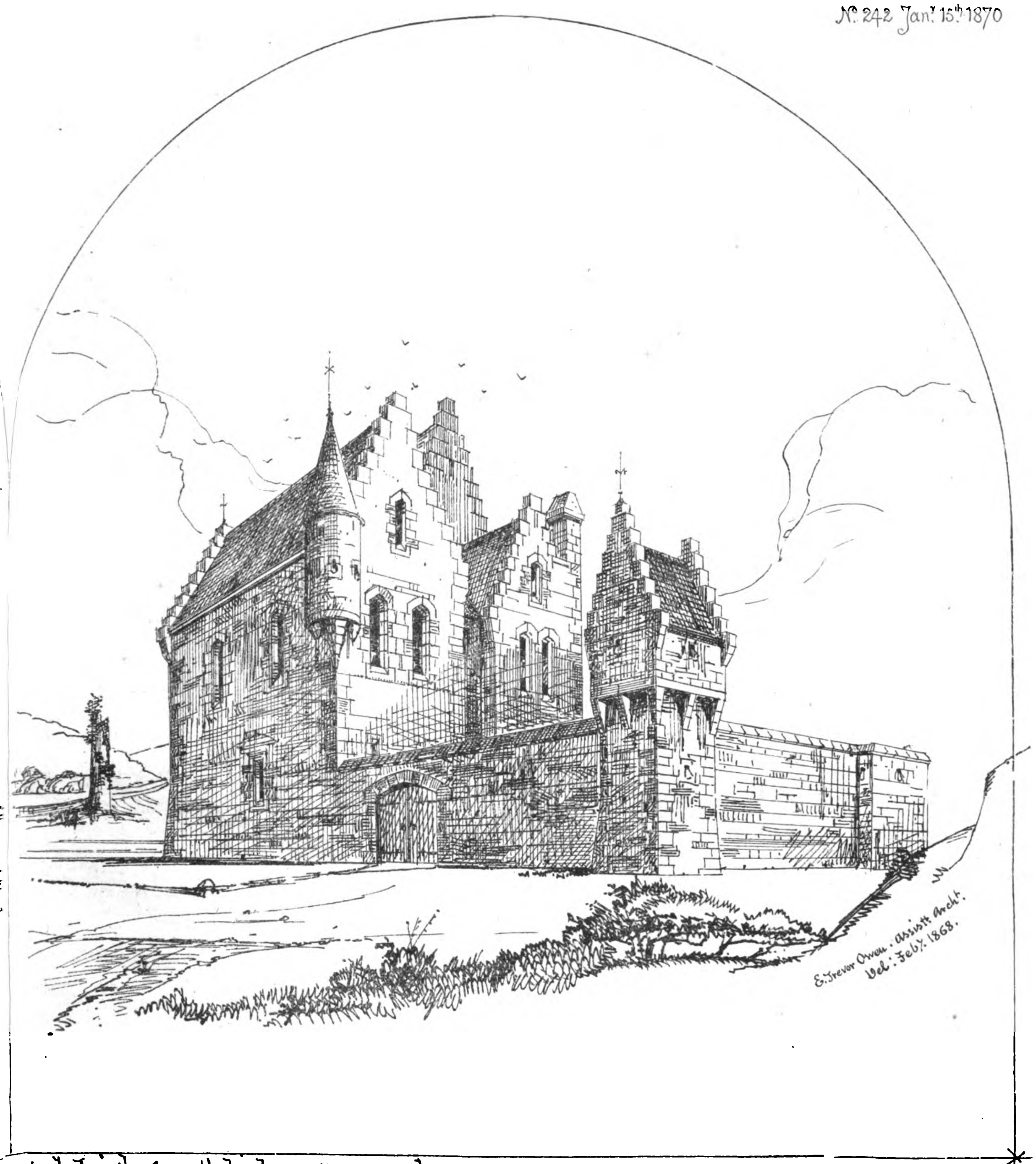
No. 242 Jan. 15th 1870


E. Trevor Owen. Assist. Archt.
Del. Feby. 1868.

Royal-Irish-Constabulary-Barrack

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from £600 to £800. By directions of the architect (Mr. William Fogerty) the plaintiff prepared a bill of reductions which the defendant's son (since deceased) offered to carry out for £900, and pay the plaintiff's fees, but which offer Mr. Walsh refused to accept. Mr. Hall, junior, died in July, 1868, and in September, 1868, Mr. Walsh entered into an agreement with Mr. Hall, senior, the present defendant, to execute the works for £635 according to a plan originally prepared by the Messrs. Hall in 1866—this plan being altered in some respects pointed out by Mr. Walsh. The agreement then made provided that the defendant should not pay the plaintiff's fees. At the trial the plaintiff relied upon a custom of the building trade by which the builder who executed the works paid the surveyor whose quantities, &c., were used. He (Mr. Justice Morris) was of opinion there was not sufficient evidence of any legal custom such as was relied upon. There did appear to be a habit to include in the builder's estimate a sufficient amount to pay the surveyor his fees, which amounted in fact to this, that the employer paid the surveyor through the builder; and Mr. Gribbon, a witness examined for the plaintiff, said the question as to paying these fees must depend upon the contract made between the employer and the builder. In this case the employer expressly assumed the responsibility as to these fees. The case of Moore *v.* the Whitney Guardians decided that if an employer prevented a builder from going on, he made himself liable to the surveyor, and that was in effect what occurred in this case. Although the defendant executed only £635 worth of work for Mr. Walsh, the verdict for the plaintiff against the defendant gave him fees on works to the amount of £2,070, £2 for lithograph copy of the quantities, and also £12 for reducing the grand plan to the more moderate one which Hall offered to carry out for £900, but which Walsh refused. The verdict had for the plaintiff should be set aside, and a verdict entered for the defendant, with costs.

COURT OF EXCHEQUER—JAN. 12.

(Before the full court).

PENALTIES FOR BREACH OF A BUILDING CONTRACT.

Lady Louth v. *James O'Neill and Others.*—Mr. Houston, LL.D., for defendants, moved for leave to plead several defences. The action was instituted to recover the penalties on a bond for £100, executed by the principal defendant—a building contractor—and his sureties, for the erection, according to specification, on plaintiff's estate, of five cottages. The plans, &c., were prepared by James M'Ardle, *the steward of plaintiff* (who acted as clerk of works), and were of a superior character! Plaintiff complained that they had not been erected pursuant to the specification, nor of the best materials, nor within the period (seven months) provided by the contract. Defendants sought to plead accord and satisfaction; that the works were duly executed; that the agreement was rescinded in various particulars; that before breach additional works were ordered, and others substituted for those in the specification, which prevented their execution within the specified time; and further, that the defendant was discharged from the covenant as to time by the plaintiff, and on the part of the two sureties (defendants) an additional plea that plaintiff and defendant varied the original agreement without the knowledge or consent of the sureties. Their Lordships granted the motion.

PAYMENT TO PROFESSIONAL WITNESSES.

AT the Coleraine Quarter Sessions, Mr. John Harvey, a surveyor resident in Coleraine, processed a farmer name M'Clenaghan for 15s. loss sustained in attending upon two days as a witness for defendant. The case having been heard, the chairman (J. C. Coffey, Esq., Q.C.) said that the question had already been decided in a superior court. A professional gentleman, having refused to give evidence, was committed to gaol; and, when the matter came to be discussed, it was decided by Judge Fitzgerald (of course in accordance with law) that if a professional witness is brought before a court to give evidence upon a matter in which skill in any particular profession of which the witness is a proficient is involved, he is to be paid for loss of time, and may refuse to be sworn unless he is paid; but if the professional man is mixed up in the transaction in dispute, he cannot legally claim one farthing for loss of time. Mr. Harvey, having drawn up the contract between the parties for whom the measurements had been made, could not claim payment. The process should therefore be dismissed.

THE WONDERS OF THE BLOOD AND ITS CIRCULATION.*

ALL plants, as well as animals, are permeated by a liquid from which they derive their nourishment, but throughout these two kingdoms of the organic world the liquid becomes gradually perfected. In plants and the invertebrates it is a colourless sap or juice, but in the vertebrates are added those objects of intense interest—the red cells. This little fish—the lanceolet—indeed, has blood in which no red cells have been discovered, and in this particular and many others must be regarded as a connecting link between the two grand divisions of animals. The importance of blood is also indicated by the fact that it is the first of the bodily constituents which appears in the embryo. The main purpose of this fluid is to make good the loss of substance which the solids suffer in performing their functions. No muscle can move, nor can the brain originate a thought, without yielding to the consuming fire of oxygen, part of itself. The blood, however, not only supplies materials to repair the breach, but also carries away the *debris.* That a stream of rich pure blood shall flow into every tissue of the body, therefore, is an essential condition of its life, and there is scarcely any organ which does not subserve this all-important fluid. The digestive organs prepare for it, from the ton and a-half of food we yearly take, a fresh store; the liver, lungs, skin, and other parts relieve it of the waste stuff of the tissues, which would clog and poison it if retained, and its distribution is accomplished by the heart and bloodvessels—these marvels of creative perfection, which, more than any other parts of animal construction, have awed and instructed natural philosophers. This living stream has often been likened to a river which feeds towns with water, affords an easy mode of conveying supplies to the houses as it passes, and, besides, bears away their waste. But the comparison is inappropriate, for, in the case of the river, the means for the removal of pollution are inadequate, and, indeed, in bearing such a burden, its natural function is perverted. Into the blood, however, substances foreign to it, and excessive quantities of its fit materials, may be thrown without hurt, so perfect are the organs for their separation or for their storage, accordingly as they are wanted or not. One instance will suffice—we cannot thin or thicken our blood by the quantity of water we take. If two dogs were bled to-day, and the proportions of water in their blood ascertained, they would be the same this day month if one drank pints of water daily, and the other not a drop.

Spouting from a wounded vessel, blood seems a red, simple liquid, warmed with the vital heat, but how complex it is I can demonstrate by four modes of analysis. The microscope will show wonderful intricacy; the spectroscope will exhibit in it more metals than you would find in a hardware shop; chemical tests will show a score of other substances; and a few minutes after blood is drawn, it will of itself separate into two, or sometimes three, constituents. Two hundred years ago Malpighi discovered that the blood swarmed with little objects, the red cells. The oxyhydrogen microscope enables us to throw on the screen an image of the human blood cells magnified some hundred times. . . The spectroscope may not only allow metals and the poisons derived from them to be detected, but the materials which produce various diseases may thus be some day exhibited. Iron is always in the blood—faintly in the green-sick girl, plentifully in the ruddy countryman; and, if the latter were to die, his sorrowing relatives might have a mourning ring made from the iron his blood would yield.

A test just discovered in Australia shows extraordinarily small quantities of blood in stains, even twenty years old. It is a mixture of tincture of guaiacum, and peroxide of hydrogen, and you see with blood a beautiful blue colour is developed. If water alone were to circulate through our vessels, it would ooze out and make us dropsical; but "blood is thicker than water," because of the albumen it contains, and therefore stays in the vessels. You see when I heat the fluid of the blood a white mass is separated, just as from white of egg, and this is albumen, the model feeding principle. Of the composition of the blood of animals I will only further say that it is identical with that of their flesh, as proven by Dr. Playfair, now member for Edinburgh University. For that and many other reasons, in 1863, I advocated the keeping of blood in the carcases of the animals we slaughter. Dr. Foot has lately told us that the lions in our Zoological Gardens are fed with flesh in which the blood is retained. They have enriched the Society with numerous healthy cubs, while the lions in the London Gardens, fed on meat butchered in the usual way, have produced a scant, deformed, and sickly progeny. The composition of the blood varies surprisingly in different diseases, and thus physicians are led to hope that with the invaluable aid of chemistry the cause and cure of many an obscure and fatal malady will be discovered. The paleness of the consumptive, the bloatedness of the apopletic, and the yellowness of the jaundiced, notably indicate changes in the quality of the blood; but the most profound alteration occurs in cholera, more than two-thirds of the water of the blood being removed. . . . . . .

In different races the composition of the blood varies, but this depends more on such circumstances as exercise, food, and air, than upon hereditary characteristics. I am sure no chemist could distinguish "the blood of all the Howards" from that of the humblest peasant, if both for a while were dieted alike. In the blood of the thorough bred horse there is less fibrin than in that of the hackney, but this is owing to the pampered life of the one, and the toilful life of the other.

The fourth analysis of the blood I have alluded to is a spontaneous one—namely, the separation of the clot serum, which occurs as the liquid coagulates a few minutes after it escapes from the body. This occurrence is very characteristic, indicates the life of the blood, and, what is remarable, it will take place when blood which was frozen is thawed, even months after it was removed. At first the blood congeals into a liver-like mass, out of which a colourless liquid is slowly squeezed, and, in about twenty-four hours the liquid is twice as large as the firm clot. The material which causes the clotting is called fibrin, from its mode of sefting into interlacing threads, which entangle the red cells in their meshes. That the fibrin only exists in blood poured out, and is then an altered condition of the white cells, I have for many years believed. . . . . . . The fact that the blood drawn by a leech does not clot has often puzzled me; but I think it is due to the smallness of the puncture made by the animal's teeth, for the blood is so slowly delivered that time is allowed for the surrounding tissues to pick out the fibrin. Clotting is all-important, for without it the slightest wound would prove fatal. If one of our Vartry pipes burst—a phenomenon you may have witnessed—out the water squirts, till the plumber stops the breach; but a wounded artery is plugged by the clotting of the blood most effectually.

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* By E. D. Mapother, M.D. Being substance of lecture delivered at Royal Dublin Society.

THE "ROYAL" HISTORICAL AND ARCHÆOLOGICAL ASSOCIATION OF IRELAND.

THIS Association held its annual general meeting on the 5th inst. at Butler House,

Colonel the Rt. Hon. W. F. TIGHE, in the chair.

The Rev. James Graves, hon. sec., read the following report:—

"The sanguine expectations expressed in the report read at the annual general meeting for 1868, with regard to the results to be expected from the change of name and constitution of the Association, then recommended and subsequently adopted by the members, have been fully realised. Many parts of Ireland, where its existence was before almost unknown, have been opened to its operations, and thus its working has attained a truly national character. The roll of members comprised on the 31st of December 682 names; of new members, 73 were elected during the year, and your committee are enabled thus to congratulate the members not only on an increase in the numerical strength of the Association, but also on its financial position, as most of the new members pay £1 per annum, whilst the subscription in no case is under 10s.

"This national character of the Association has, however, led to still more important and gratifying results: towards the close of last year a memorial signed by your Very Rev. President on behalf of the Association, was laid before the Queen, the prayer of which was by her Majesty graciously received, and her pleasure communicated through the Secretary of State for the Home Department as follows:—

"'Whitehall, 27th December, 1869.

"'SIR,—I have had the honour to lay before the Queen the Petition of the President and Members of the Historical and Archæological Association of Ireland,' and I am to inform you that her Majesty has been graciously pleased to comply with its prayer, and to signify her desire that the Historical and Archæological Association of Ireland be henceforth called 'The Royal Historical and Archæological Association of Ireland,' and that the members thereof be styled 'Fellows of the Royal Historical and Archæological Association of Ireland.'

"'Your obedient servant,

"'H. A. BRUCE.

"'Rev. James Graves, &c., &c."'

"Your committee feel assured that these gracious concessions will be most gratefully received by the Association at large; and they would recommend that, by virtue of the powers thus conferred, all the surviving original or founding members of the Association should be constituted the first Fellows under the Queen's letter, no additional payment being required from them; all future Fellows to be elected and to pay an annual subscription of £1, and an entrance fee of £2.

"In order to carry out the intention of the Queen's letter in practice, your committee would recommend that amended general rules, a draft of which will be submitted to the meeting, should be adopted as the future constitution of the Association.

"The increase in the members of the Association, together with the large number of cognate learned societies for the publications of which your 'Journal' is exchanged, having nearly exhausted the large impression of 800 copies of the new series commenced in 1868, and as a still further demand may be confidently expected, your committee recommend that a fresh issue should commence with the year 1870, to consist of 1000 copies, and that this issue should be entitled 'The Journal of the Royal Historical and Archæological Association of Ireland.'

"It may be worth placing on record that your Association has, during the past year, caused type to be cast to enable the ancient Irish Cryptic character known as *Ogham Creabh* to be "set up" by the printer; every representation of this character hitherto attempted by any individual or society having been effected by engraving, or by the imperfect means of the 'rules' and 'hyphens' used in ordinary Roman type.

"During the past year your committee has originated a movement to secure for the library of the Association a large and valuable collection of Archæological drawings and sketches—the result of the lifelong labours of your late lamented associate, George Victor Du Noyer, Esq. Your committee rejoice to say that the price fixed on these drawings by the friends of Mrs. Du Noyer has already been paid, and the collection handed over to your secretary. From the liberal response already received from the members, your committee trust that when next they report to the Association they will be enabled to state that the sum to be presented to Mrs. Du Noyer will considerably exceed the stipulated price, and will prove the high estimation which her late distinguished husband won for himself by his disinterested labours in the cause of Irish Archæology.

"The thanks of the Association are due to Evelyn Philip Shirley, Esq., for aid in the illustration of the 'Journal' by the presentation of a large number of woodcuts needed to complete 'Dineley's Tour in Ireland in the time of Charles II.'

"During the past year not only your Association, but Celtic and historic archæology and literature in general has suffered an irreparable loss by the death of the Rev. James Henthorn Todd, S.F., T.C.D. It would be out of place here to enlarge on merits so well known to the literary world as those of Dr. Todd are, but it may be allowed your committee to place on record the interest which that eminent scholar ever exhibited in the welfare of this Association. He joined its ranks when it had to contend with many difficulties; he rejoiced in its successful progress; and to your secretary, in his office as editor of your 'Journal,' the aid of his accurate and varied knowledge was cheerfully imparted even when suffering under his last and fatal illness. Your committee have also to record with regret the removal by death of two old and zealous members—Major Elliott, of Rathcurby, and Thomas L. Cooke, Esq., Parsonstown."

The following was suggested by the hon. secretary, and passed unanimously:—

"Resolved—That the annual report be printed, and that we hereby express the deep sense of our gratitude to her Majesty the Queen for the favours she has so graciously conferred on this Association."

It being necessary to nominate two trustees under the amended 13th rule, the names of Dr. James and Peter Burtchaell, Esq., County Surveyor, were suggested, and both gentlemen having consented to act, they were unanimously elected the first trustees of the Association.

Mr. Graves, as treasurer, stated he had in hands £35, received for life compositions of members, which he would hand over to the trustees, to be invested, along with the entrance fees of some fellows to be this day elected.

The treasurer, having brought up his accounts for the past year, J. G. Robertson and P. A. Aylward, Esqrs., were requested to act as auditors, and to make their report at the next meeting.

The committee of the past year was re-elected to serve for the current year.

Regulations for the custody and management of the Du Noyer Drawings were proposed by George H. Kinahan, Esq., and adopted, as follows:—

1. That these drawings of our late distinguished associate be entitled "The Du Noyer Drawings."
2. That no fellow or member be allowed to borrow any of the volumes of the Du Noyer Drawings out of the custody of the officers of the Association, except by special leave of the committee.
3. That facilities be given to fellows and members of the Association, and to others introduced by same, to copy the sketches for archæological purposes. All such copies, whether published or otherwise, to be acknowledged as "taken from the Du Noyer Drawings by permission of the Royal Historical and Archæological Association of Ireland."

On the motion of J. H. Bracken, Esq., C.I., seconded by M. Fitzgibbon, Esq., the following resolution was unanimously agreed to:—

"That a vote of thanks be given to the non-members of this Association who have aided in the purchase of the Du Noyer Drawings, and especially to Mr. Du Noyer's colleagues of the Geological Survey of Ireland."

The election of fellows and members was next proceeded with.

Three fellows were proposed, and elected as follow:—The Rt. Hon. Lord Castletown, of Upper Ossory; the Rev. G. R. P. Colles, LL.D., Chipping Norton, Oxfordshire; Wm. B. Leonard, Esq., Geological Survey of Ireland, Kingscourt, Co. Cavan.

Two gentlemen, already members of the Association, were admitted to fellowship, on payment of the entrance fee, viz., General the Rt. Hon. Sir Thomas Larcom, Bart., K.C.B., LL.D., F.R.S., M.R.I.A., &c., Woodslee, Wimbledon, London; John S. Sloane, Esq., M.R.I.A., Engineer Irish Lights Department, Woodlands Farm, Dublin.

The following were elected as members:—Sir C. C. W. Domvile, Bart., Santry House, Co. Dublin; Mons. Henri Gaidoz, Editor of the *Revue Celtique*, 32, Rue Madame, Paris; Miss Mary Anne M'Dougall, Hollybrook Park, Raheny, and John G. Adair, Esq., Bellegrove, Monasterevan; the Rev. Edward Rowan, R.C.C., St. Kevin's, Glendalough; Oliver J. Burke, Esq., Barrister-at-Law, 22, Gardiner's-place, Dublin; the Rev. John Grainger, M.A., Broughshane, Co. Antrim; the Rev. William Handcock, Ballyknocking, Kilsheelan; Mr. Joseph Digges, 27, Lincoln-place, Dublin; John T. Banks, Esq., M.D., President Queen's College of Physicians, Dublin.

PRESENTATIONS.

A large number of books and pamphlets, the greater portion being the publications of kindred societies, sent for presentation to the library, were laid before the meeting. Amongst them was a copy of Miss Stokes's splendid illustrations of Celtic ornamentation copied from the ancient MSS. in Trinity College.

Mr. John Larkin, Columbkill, presented a curious fragment of sculpture which had formed an ordinary building stone in a house on his land, held from W. Flood, Esq., Paulstown Castle, recently taken down. The house had been inhabited by his family "for seven generations."

Dr. A. W. Foot, Dublin, contributed an interesting paper on the Cave of Dunmore, which he had a short time since explored, in company with the Rev. James Graves and Mr. Burtchaell, County Surveyor, for the purpose of investigating the human remains found in the cavern.

The Earl of Charlemont contributed an original letter, from amongst his family papers, on the subject of the fatal duel between Harry Flood and James Agar. This letter was of great interest, as it had never before been made public.

Amongst the other papers contributed were the following:—

A notice of Sir Edmund Butler, of the Dullagh Knight (brother of Thomas tenth Earl of Ormonde, and remarkable as having resisted the claims of Sir Peter Carew, by whom he was defeated in a battle fought between Kilkenny and Kilmogar), illustrated by State Papers now for the first time to be printed, by the Rev. Jas. Hughes, Maynooth College.

A contemporary account (from the State Paper Office, London) of the expedition of Lord Deputy Sydney to attack a cranoge in an island in a lough near Armagh, 21st September, 1566; edited and contributed by Dr. Caulfield, Cork.

A notice of a curious stone coffer, or mediæval cist, found at Movilla, Co. Down (with a drawing); by William H. Patterson, Esq., Strandtown, Belfast.

Observations on a stone circle at Rathhugh, by Mr. Thomas Stanley, Tullamore.

Thanks having been voted, in the usual form, to the various donors and exhibitors, the Association adjourned till the first Wednesday in April.

THE ROYAL IRISH ACADEMY.

A GENERAL meeting of the Academy was held on Monday evening,

Sir ROBERT KANE in the chair.

Rev. Dr. Dickson, F.T.C.D., gave an account of a fragment of a block-book in the library of Trinity College. It is a specimen of early printing before movable types were employed. The only perfect copy of the same work, entitled "Ars Moriendi," is in the collection of T. O. Weigel, of Leipzic. The date of the printing is 1438. A photographic fac-simile of Herr Weigel's copy was exhibited. This copy is stated to be the "editio princeps" and unique, and corresponds exactly with the fragment remaining in the College Library.

The paper was referred to the council for publication.

Dr. Barker read a paper on "The Illumination of Microscopic Objects."

The paper was referred to the council for publication.

The following gentlemen were elected members:—William Archer, Esq., 21, Upper Pembroke-street; Robert Stawell Ball, Esq., M.A., 43, Wellington-place; Robert Day, Esq., jun., Montenotte, Cork; Sir John Esmonde, Bart., Ballynastragh, Gorey; T. A. Jones, Esq., Pres. R.H.A., 9, Up. Mount-street; Rev. John P. Mahaffy, F.T.C.D., 88, North Great George's-street; Joseph P. O'Reilly, Esq., C.E., Sandymount.

THE ROYAL DUBLIN SOCIETY.

The third evening scientific meeting for the session of 1869-70 will be held on Monday evening. The meeting will be held in the Lecture Theatre. Communications:—Dr. Alexander Macalister—"On the Curves in the Spine, considered from an æsthetical point of view." Dr. J. Emerson Reynolds, keeper of the minerals and analyist—"Notes on the Determination of the 'Flashing Point' of Petroleum Oils in accordance with the terms of the Act of Parliament." For exhibition—Drawing of the Nebula in Argos. A new Light recently proposed for Use in Photography, by Dr. Van Monckhoven, of Vienna.

INSTITUTION OF CIVIL ENGINEERS OF IRELAND.

A general meeting of this institution was held on Wednesday evening in the Museum Building, Trinity College: J. Ball Greene, Esq., president, in the chair. Mr. C. P. Cotton read a paper on "A novel means of transit for minerals in the county of Sligo;" Mr. Bailey exhibited a model by Mr. Hodson, of London, used for a similar purpose; and Mr. A. M'Donnell described a movable crane, now in use at the Inchicore Works.

THE ROYAL GEOLOGICAL SOCIETY OF IRELAND.

A general meeting of this society was held on Wednesday evening in the Museum Building, Trinity College: William Andrews, Esq., in the chair. Dr. W. Lauder Lindsay read a paper on "Further Researches in the Gold Fields of Scotland;" Rev. Dr. Haughton, a paper by J. D. La Touche, Esq., on "A spheroidal structure occurring in some Silurian rocks of Wales;" and Professor Macalister a paper on "Some fragments of a cranium of a low type, dug up recently in the vaults of Trinity College Chapel."

BOOKS RECEIVED.

Varieties of Irish History from Ancient and Modern Sources and Original Documents. By James J. Gaskin. Dublin: W. B. Kelly, Grafton-street. Pp. 446.

The author of this work accounts for its appearance by telling us that, having delivered a lecture on the subject of Dalkey, its ancient port, its holy wells, and its castles, he was subsequently, at the request of several residents in the locality, induced to undertake its publication with "very many additions." The additions ("which he hopes will render the work more acceptable and entertaining") consist of archæological, topographical, social, and political memoranda, collected, at an enormous amount of trouble and research, from various sources not generally accessible.

The history of the mock kingdom of Dalkey and its monarch, Stephen I.; the "coronation sermon," said to have been written by the celebrated John Philpot Curran; and the account of the festivities so long kept up here, will no doubt be read with deep interest by many.

Respecting the postal arrangements between Dublin and London at the end of the last century, our author gives some portions of a report presented to the Irish Parliament, suggesting plans for shortening the time in transmitting the mails from one capital to the other. Eighty years ago about *fifty* hours were spent in what is at the present day accomplished in *eleven!*:—

"The communication between London and Dublin may be shortened in point of time nearly one-half: to judge of this, it is necessary to see how the mail is despatched at present (1798); it is sent to the packet at different hours, from six till twelve in the evening, according as the tide serves; but when the tide serves between twelve and six, it waits for the tide: so that, taking the average, there are three hours here lost for one-half of the year. It is put on board the packet at the Pigeon-house Dock. If the wind blow fresh from the east, or north-east, the packet cannot sail; and thus an entire tide, sometimes two tides, or twenty-four hours, are lost. If the wind happens to blow fresh from the north at neap tides, the packet is sometimes neaped in the dock, as happened last summer, and, therefore, cannot sail; all this to the very great injury of trade. When the packet sails, unless the wind be to the westward, she has considerable difficulty in working out, to the great loss of time. When she arrives at Holyhead, which, taking an average of nine hours, is, perhaps, too short a time, the mail there waits for the coach to go out in the morning, and crossing two ferries, and passing over several mountains, and the sands of Cheshire, forty-seven hours are allowed for its arrival in London, but in general it takes forty-eight. When the mail returns to Holyhead, nearly the same delays arise there again (for that also is a tide harbour), so that, taking the average, a letter written from Dublin to London is in general not answered in less than a week; but, supposing the packet to lie and take in the mail at the Sound of *Ireland's Eye*, the mail would then be despatched at a certain hour every night, for the packet could sail at any given hour, and with any wind that blows, and could go out in weather that she could not work out in from the Pigeon-house Dock, and in fifteen minutes from the time the mail is put on board, she would be completely at sea, lying her course. When the mail arrives at Holyhead, if, instead of sending it across two ferries to Chester, it were sent from Bangor ferry, along Lord Penryn's road, coming out at the head of the valley of Llanroost, to Shrewsbury, by paying a little attention to shortening the road through Anglesea, and finishing Lord Penryn's road about four miles, the distance might be shortened by twenty-four miles. The distance between Holyhead and Shrewsbury at present is one hundred and fourteen miles; shortened by twenty-four, it would be ninety. The expenses attending the completing this line of road would not exceed £4,000. The distance between Dublin and Ireland's Eye might be shortened half a mile, and make the distance six miles and a-half. Supposing, then, this mode adopted, the mail cart might run from Dublin to Ireland's Eye in one hour; from Ireland's Eye, the packet being near two leagues to the eastward of the Pigeon House, and being so readily at sea, by giving a little premium to the captain and crew (supposing a guinea a trip), for each time the mails were landed in twelve hours after delivered, this being little more than the rate of four knots (or miles) an hour, five times out of six the mails would be delivered in time; and if, instead of sacrificing the interest of the public to the convenience of mail-coach travellers, their interest were to give way, and the mails be sent forward in a lighter carriage, carrying two passengers only, and the coachman and guard, with a little encouragement the mails might be pushed from Holyhead to Llangollen (sixty miles by the short road) at the rate of seven miles an hour, and from Llangollen, the difficulties of the Welch road being surmounted, and the road from thence through Shrewsbury to London (one hundred and eighty-six miles good), the mail might be pushed at the rate of eight miles and a-half an hour (the mails to Shrewsbury formerly ran ten miles an hour), the account of time would then stand thus—

	Hours
From Dublin to Ireland's Eye	1
Putting mails on board	0¼
From Ireland's Eye to Holyhead	12
Landing mails	0¾
From Holyhead to Llangollen, allowing for crossing Bangor ferry	10
From Llangollen to London	23
Total	47

"Supposing, then, the mails to leave Dublin at eight in the evening, they would be at Holyhead a quarter past nine in the morning; leave Holyhead at ten, be at Llangollen at seven in the evening, and in London at five the next evening, and letters might be answered by that night's post; and, supposing the Irish mails to leave London also at eight, and allowing one hour more for coming from Llangollen by night, the mail would be at Dublin at six the fourth evening. Upon return of the mail from London, in order to avoid any delay arising at Holyhead from waiting for the tide, a short pier should be run out from the rock near the light-house, at which the packet next in order for sailing should lie afloat, and which would be then ready for sea at any time of the tide, and thus the communication between the two countries would be completed, without losing time on either side; the expense of this pier would amount to about £4,000. The advantages of such expeditious communications are too obvious to need argument.

"Another advantage arising from the adoption of this plan would be the speedy despatch of government expresses, which at present are frequently delayed for hours together on account of the tide."

To those who have never been favored with a view of the "Bay of Dublin," the following may be offered as a fair description, while at the same time it affords a sample of the author's style:—

"Nature has done much for this far-famed 'Beautiful Bay.' She has disposed of some of the numerous objects of her creation in the most picturesque and artistic style, in decorating its gently sweeping and undulating shores. Edwin Hayes, R.A., the greatest *marine* painter that Ireland has ever produced, whose numerous art productions, sketched in calm, sunshine, and storm, in the Bay of Dublin, have been highly prized by the Royal Academy of London, believes that, for the artist and lover of nature, it possesses more real and *ideal* beauty, caused by the happy grouping of its charming accessories, than any other bay he ever sketched, either on the coasts of England, Scotland, France, Spain, or Holland. To him, in the days of his youth, it was a never-failing source of interest and beauty. Creswick, another marine painter, of European reputation, said that Dublin Bay, in an autumnal sunrise, was one of the finest prospects of nature that he had ever seen. For miles round the Bay of Dublin we have grand succession of scenic effects, abounding in bold and striking contrasts—in picturesque foregrounds for the painter, and in dazzling bird's-eye views for the lover of nature.

"The amphitheatre of mountains which extends from Bray Head in the south, and terminates in the Dublin chain, where 'Young Harry, with his beaver on,' was knighted by the unfortunate Richard II., presents a strange contrast with the well-wooded, historic, and pastoral shores of Fingal, Clontarf (the Marathon of Ireland), and Sutton, on the north-east; while the caves of *Ben-Edair* (the Hill of Howth), in which it is known that seals have taken refuge in storms; the "Needles," rearing their craggy heads most majestically above the waves; the Bailey light, with its associations of sadness, in the north, present a *coup d'œil* of surpassing beauty; while the white-robed Poolbeg light (the Eddystone of Dublin Bay), which is approached by a wall 17,754 ft. long, running through the sea, warns mariners of the dangers of the North and South Bulls or banks on either side of it."

We are told that the purity of the Dalkey air has been esteemed from the most remote times. When Dublin was visited in 1575 with a dreadful plague, its inhabitants rushed to Dalkey, as to a sanctuary. At a public entertainment on the occasion of laying the foundation-stone of Coolamore harbour, in September, 1868, one of the speakers stated "that he had known nine apothecaries obliged to leave the place *for want of business*"!!

On the ancient castles of Dalkey and Bullock our author descants enthusiastically, quoting several authorities in support of his statements.

We cannot refrain from extracting a passage which is peculiarly suitable to our columns:—

"In the castles of Dalkey and Bullock, and more particularly in the latter, First Pointed doorways, evidently original, are found side by side with others which have round or semicircular headings. This circumstance alone would indicate that the buildings cannot be older than about the middle of the twelfth century—a period to which the plain depressed moulding, which runs round the external angles of the small semicircular windows, would seem to point. The simple barrel-arch, which forms the vault at Bullock, Dalkey, and elsewhere, is also highly characteristic of the same age. A similar remark applies to the continuous row of pointed arches which projected from the interior of the wall of the upper chamber of the Dalkey castle, now destroyed. But of all the architectural evidences of the age of the buildings under notice remaining, a warrior's head, which stands out from the south-western angle of the western tower of Bullock castle, at a considerable distance from the ground, is the most important. This head is represented as protected by a conical helmet, without vizor, but furnished with a *nasal* or straight bar, which defended the front of the face, and particularly covered the nose of the wearer. There are numerous sculptural and pictorial authorities for assigning this curious carving to a period not later than A.D. 1200. Taken by itself, it might possibly be considered older; but as the building to which it is an original appendage contains features, such as First Pointed and other arches of the so-called 'Gothic' style, we cannot suppose that it can date much earlier than about the year 1160. One other little attempt at ornamentation worthy of notice may be observed in the larger castle of Dalkey; it is the arrangement in chevron fashion (on a line with the base of the tower parapet) of the stones of the chimney. This has a most decidedly twelfth-century look."

We must draw our notice to a close—sufficient has been said to give our readers some insight into the very varied contents of these interesting "VARIETIES," and to induce them to invest a few shillings in the purchase of a copy. It is a work that will be always "new," and that may be taken up and read at convenient intervals.

Mr. Gaskin may well be proud of his labors; we cannot do less than venture a hope that the present edition will soon be exhausted, and that a new and revised one will be called for.

The publisher (Mr. W. B. Kelly, of Grafton-street) has spared no expense in the production of this work in our city; the printing and paper will bear examination; the binding is very effective. Some good (though rather highly-tinted) chromo-lithographs and a map accompany the volume.

CITY IMPROVEMENTS.

MR. John M'Curdy, C.E., has furnished the Board of Trinity College with plans for the improvements contemplated in front of "Old Trinity," and also along the side bounded by College-street. The Board generously propose to bear half the expense; the Municipal Council to guarantee the other half. The granite base and railing in College-street is to correspond in every way with that erected twenty-six years ago at opposite side of College grounds in Nassau-street, under the superintendence and from the designs of Mr. Robert Mallett, formerly of this city. The sheds and workshops which stand behind the old and unsightly wall are to be removed; the gables of the chapel and dining-hall pointed and restored; and many other improvements imperatively required effected. The new railing in front will be thrown back about 15 ft., and this space added to the roadway will assist greatly the traffic facilities at this point. It is said that two or three fountains will be placed in front of the College. The removal of the Burke and Goldsmith statues will, of course, be a matter of necessity. In the IRISH BUILDER, No. 227, we gave a full account of the construction of the "*Grille* in Nassau-street." We understand that at an early meeting of the Civic Body the matter will again come on for discussion, and we hope for ratification.

PERILS OF COUNTY SURVEYORS IN IRELAND!

THE following appears in a recent number of the *Engineer*:—

"In the recent open competitions for two county surveyorships in Ireland, by examination, instituted by the Civil Service Commissioners at Dublin, Messrs. L. T. Vernon Harcourt and Henry Temple Humphreys, A.I.C.E., were the successful candidates.

"We hope that both gentlemen have insured their lives!

"We congratulate them on no small display of personal courage!

"Upon the whole, we think that a surveyorship in Sierra Leone would be the safest of the two posts"!!!

PROFESSIONAL DISLOYALTY.

IN reviewing some of the building competitions during the year just closed, a contemporary (whose birth was registered on its first Saturday) has the following:—

"In June the guardians of Woolwich appointed a firm of auctioneers to erect their new workhouse. One cannot conceive anything more ridiculous. They go, no doubt, to their lawyer to be doctored. It seems that there was no open competition for the work, but had there been one, with proper professional advice to assist at the decision, the auctioneers would still have stood an equal chance with the rest, whereas the whole matter was left entirely to the decision of men who probably knew nothing about the subject under consideration, and were desirous to beat down the remuneration to 2 per cent., at which price a Mr. Gosling, architect, of Woolwich, actually offered to do the work, whilst Messrs. Church and Rickwood, the auctioneers, were more loyal to a profession to which they do not belong, and refused to take less than 4 per cent. When we are thus attacked from within the fold, the subject becomes extremely difficult to deal with, and we must cease to wonder that architects are but lightly esteemed by outsiders."

MISCELLANEOUS.

THE STEAM OMNIBUS AT EDINBURGH.—Nairn's patent steam omnibus is similar in appearance to one of the largest horse omnibuses. It has only three wheels, however, of 3 ft. in diameter and these are solid and of wrought iron, with willow-wood tyres. The power is communicated through the two hind wheels, and the vehicle is steered by the front wheel. The boiler is in front, and the vapour from the furnace passes along beneath the seats outside to the hinder end, where it passes out through a short horizontal funnel above the conductor's head. There are arrangements for preventing the heat from incommoding the passengers, either inside or outside. The vehicle accommodates fifty passengers, and the engine is of six-horse power. The speed can be increased up to twenty miles an hour if desired. The cost is about that of a horse omnibus with the horses. These particulars are given by the patentee, Mr. Nairn, of Leith. —*Builder*.

The Congress of Pre-Historical Archæology, lately held at Copenhagen, arrived at these results—that the hitherto supposed early dates of the "Kitchen-middens" would have to be reviewed, and the early condition of Scandinavia was considered inferior in civilization to the more southern parts of Europe. Neither were the stone, bronze, and iron ages so strongly marked as supposed, and the speakers at Copenhagen often brought with them specimens to illustrate their remarks.

A JOINT-STOCK COMPANY'S OFFICE.—It was none of your temporary booths shut up fungus-like in the heart of the City Vanity Fair: booths run up of materials picked up anywhere and draped in gaudy calico and tinsel to hide their rottenness from the public. In the pride of its characteristic oriental architecture, the Credit Foncier reared itself like Abdu-y-raham's famous mosque, upon massy columns contributed from every clime—Ottoman porphyry, Hellenic marble, Scottish granite, freestone, sandstone, and Kentish rag. The City pillars, most critically scrutinized by competent judges, as being quarried nearest home, were solid enough, as all the City knew. Their bases were seated the deeper, that years and former panics had heaped around them the wrecks of many a fallen house. Now the business was full six months old too, and in those days businesses were not only born into their prime, but they lived fast. The Credit Foncier and Mobilier of Turkey had come to be looked on as rather a venerable institution, and its governor, Mr. Childersleigh, was respected as an old City man. Long ere now it had moved out of its temporary offices into a palace in Lothbury, whose vast portals and Brobdignagian windows would have dwarfed to pigmies a race of giant customers. The mansion had been reared regardless of all cost by a speculative building company, on a site bartered for a carpeting of bank notes. Its founders had given the architect *carte blanche*, merely stipulating that a fabulous number of Peterhead granite columns should be introduced somehow or other along the Italian façade. The upper row of these were diverted from their more natural purposes, and consecrated to the support of a heterogeneous colony of statues, among which, however, Childersleigh's more fastidious taste had insisted on putting some sort of order. Towering high above the rest, her features wreathed in benignant smiles, a colossal figure of Plenty was emptying out a cornucopiaful of the choicest gifts and blessings on the floods of lucky clients that passed surging out and in below.—*Cornhill Magazine*.

PETRIFYING HUMAN BODIES.—A remarkable discovery has just been made by a man at Grenoble, by which it is calculated that cemeteries and graveyards will become superfluous. At the decease of an individual the body is plunged into a liquid invented by this man of Grenoble, and in about five years the individual is turned into stone. The secret of the petrifaction is only known to the discoverer. But he goes further. He says that in a thousand years' time, if persons will only preserve their relatives and friends, they will be able to build houses with them, and thus live in residences surrounded by their ancestors!

THE HEALTH OF DUBLIN.—In the Dublin registration district the births registered during the week ending January 8th, amounted to 153. The average number in the corresponding week of the years 1864 to '69 inclusive, was 143. The deaths registered during the week were 174. The average number in the corresponding week of the previous six years was 156 Eleven deaths were caused by fever, viz., 8 by typhus, 2 by typhoid or enteric fever, and 1 by simple continued fever. The average number of deaths from fever registered in the corresponding week of the previous six years was 8. Scarlet fever proved fatal to 13 persons. Two deaths resulted from diphtheria, 3 from croup, and 1 from whooping cough. Seven children were carried off by convulsions. Bronchitis was the cause of 30 deaths, and pneumonia or inflamation of the lungs of 5. Four deaths were referred to apoplexy, and 3 to paralysis. Ten deaths were caused by heart disease. Two deaths were ascribed to liver disease, and 1 to nephria or Bright's disease. Phthisis or pulmonary consumption caused 24 deaths, mesenteric disease 4, and hydrocephalus or water on the brain 8. Four deaths resulted from cancer. Eleven deaths from violent causes were registered—of these 10 were accidental, and 1 was homicidal. Fifty-seven of the deaths registered during the week occurred in hospitals and other public institutions; of this number 10 took place in the North Dublin, and 15 in the South Dublin Union Workhouse. The number of deaths registered in the entire of the Dublin Registration District during the week, represents an annual ratio of 29 in every 1,000 of the population by the Census in 1861. In London the ratio was 28; in Glasgow 47; and in Edinburgh 37.

A CASE FOR THE LAWYERS.—It is stated, but we (*Building News*) know not with how much truth, that there will shortly come before the courts a case of greast interest to architects and builders. About four years ago a company was formed in Birmingham for the purpose of building an exhibition hall, to be called the Curzon Hall. Mr. Edward Holmes, of Birmingham, was appointed architect; and subsequently the tender of Messrs. Hoise'y Brothers was accepted for the building. Four of the annual dog shows have been held in the hall, and it has also undergone some alteration, under the superintendence of another architect. Some defects of construction are now said to exist, and the company intend bringing an action against Mr. Holmes.

THE GLASGOW JOINERS.—The joiners of Glasgow have resolved to give notice to the employers that, on and after the 1st March, they would adopt the nine hours' system, and require the advance of a halfpenny per hour.

EXPEDITIOUS SURVEYING.—A trigonometrical survey of England and Wales, on the scale of one inch to the mile, has just been completed. The survey was ordered just 80 years ago.

It appears that the surface of glass which contains soda undergoes considerable change after a lengthy exposure to the air. Bluish glass undergoes no such alteration, but that which has originally a greenish tinge becomes brown after a time, whilst very pure white deteriorates rapidly, showing first a yellow, then a brown, and finally a violet film. At this season of the year we do not require this additional colouring to the appearance of our already discoloured atmosphere. It has been noticed that some modern stained glass on a foggy day has almost the richness of the ancient. We need not go for a solution of this. The old glass has acquired in the course of ages a film which takes the place of a permanent fog, especially on those colours which, like the ruby, are formed by a thin coating of the coloured glass on a thicker plate of transparent metal.

MODERN CUSTOMS.—Presentations and Testimonials are largely on the increase; this modern custom appears to extend to almost every household, for no auspicious event is allowed to pass without its being marked by some pleasing souvenir; Birthdays, Christenings, Marriages, the seasons of the year, such as Christmas, New Year, &c., invariably receive special commemoration The attention of one of the great London Manufacturers, Mr. J. W. BENSON, of 25, Old Bond Street, and of the City Steam Factory, Ludgate Hill, has been directed to this subject. With the view of giving more artistic effect to this custom of society, he has published a most interesting Illustrated Historical Pamphlet upon Watches and Clocks, also one upon artistic Gold Jewellery, Silver and Electro plate; all are profusely illustrated with choice designs, and are sent post free for 2d. each, thus bringing within the reach of those who live even thousands of miles away from London, one of the largest and most artistic collections which can be seen in any part of the world; and, if necessary, designs are prepared to illustrate any special case.

The Proprietor of the IRISH BUILDER *requests that all parties who have been furnished with accounts from the office will send the amounts of same immediately. P. O. Orders should be made payable to* MR. PETER ROE.

All Communications respecting the IRISH BUILDER, *should be addressed to* MR. PETER ROE, 42, *Mabbot-street, to whom all payments for Subscriptions and Advertisements must be made.*

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The Irish Builder.

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Chichester-by-the-Sea, Whitehead.

SITUATE between Whitehead and Blackhead, two boldly-projecting headlands at the entrance into Belfast Lough, and distant from Belfast about eleven or twelve miles, is a beautiful and well-sheltered bay, which takes its name from Castle Chichester (an ancient seat of the Donegal family), of which the only portion now remaining is the old square tower. The great natural beauties of this bay, and its evident capability for being developed into a delightful sea-side retreat, have induced a Belfast gentleman of energy and good taste to purchase the most desirable portion of it, with the object of converting it into a *first-rate* watering-place.

The site selected has every advantage—sloping gradually and gently up from a lovely beach, sheltered from the east and west by the noble headlands above nentioned (each rising perhaps 1,000 feet above the sea level), and possessing an aspect directly southern, there are few places with which we are acquainted in this country possessing the same natural advantages, or offering equal inducements to those whose means allow them to exchange during the summer months the heavy, oppressive atmosphere of the city for the invigorating freshness of the sea breezes. In addition, however, to the attractions afforded by circumstances of site and charming scenery, there is still wanted—before a watering-place can become a favorite resort, especially for the members of a mercantile community like Belfast—railway communication. In this respect Chichester-by-the-Sea is extremely fortunate, inasmuch as the Whitehead station of the Carrickfergus and Larne Railway is so situated in the very centre of the property that from it to the most remote part of the ground would be only a few minutes' walk; and we are certain that the able and courteous manager of the Northern Counties line of railway will increase the number of trains, and at the hours most convenient for those whose pursuits require them to go up and down daily. Another very great advantage to parties building on this property is, that every householder will be entitled to a first-class *free* ticket for ten years. During the summer season, those who prefer it will have the opportunity of travelling by water, as it is the intention to have a steamer plying regularly from Belfast to the barbour at Whitehead. From what we have said it will at once be seen that this enterprise has everything to recommend it most favourably to the people of Belfast and neighbourhood, both as to situation and facilities of communication.

The proprietor, Hugh Andrews, Esq., has set to work in the right fashion. He has appointed as his architect Mr. T. Hevey, of Belfast, who has laid out the ground to the best possible advantage; and, to judge from the "bird's-eye" view (see illustration), Chichester-by-the-Sea will far exceed in picturesque arrangement any of the local watering-places. In order to give at once an impetus to the movement, Mr. Andrews is about to build some blocks of houses for letting during the season, and our illustration contains a perspective view and plan of one of these blocks (of four houses), in every respect suitable for the purpose, both as regards the external effect and internal accommodation. The ground will be let in lots of an acre or half-acre, as may be desired; and the proprietor is prepared to advance *one-half* the cost to those who propose building, at a very fair rate of interest, added to the ground rent.

A very noticeable feature in the plan is an esplanade or terrace along the shore, about 20 feet wide, common to all the residents. This will prove a great attraction, and one the absence of which is much felt in Bangor, Holywood, &c.

The works will be commenced immediately, and some of the houses will be ready for occupation in May or June next.

We had recently the pleasure of going over the ground with Mr. Wright, of Whitehead, and were much struck by the magnificence of the views from it. Immediately opposite is Bangor; to the left Scotland is plainly discernible; to the right a good portion of Belfast Lough comes into view, and inland there are good views of wood and water.

We understand the maps and other information can be obtained on application to Mr. Andrews, Prince's Dock; to Mr. Wright, Whitehead; or at the architect's office, 12, Linenhall-street, Belfast.

We heartily wish Mr. Andrews success in his spirited undertaking.

CRAMER AND CO.'S NEW MUSIC WAREHOUSE.

ON the site in Westmoreland-street, formerly occupied by Mr. Marcus Moses, there has recently been erected a new pianoforte gallery and music warehouse for Messrs. Cramer and Co. The building just completed adds greatly to the appearance of this leading thoroughfare of our city. The front is of a mixed style of architecture—Italian-Gothic, with modifications to suit our variable climate. The upper portion is built chiefly of white and coloured bricks, pierced by circular hood windows, with limestone dressings, head mullions, and carved bosses, resting on limestone pillars, with foliated capitals. The arcade of the upper floor is one series of limestone columns, with ornamental capitals. The entire front is surmounted by a cornice of the same stone, supported on large consoles. The shop front is composed of two large and highly polished mahogany sashes, with plate-glass windows; the porch at the entrance is also of mahogany, and the flooring is composed of tesselated pavement. On the right of the shop front is a fine hall entrance, in limestone, elaborately moulded and carved. The first wareroom is about 50 ft. square, and from this two broad flights of stairs of eight steps each, under two arches, supported by metal columns, with ornamental capitals, lead into a larger wareroom. This—the principal wareroom—is very extensive, and a gallery, 10 ft. wide, runs along two sides of it. The gallery is also supported by metal columns of an ornamental character. This apartment is lighted by clear-storey windows from the top. All the pillars are painted in imitation of Aberdeen marble by Mr. Battersby, of St. Stephen's-green, who also decorated the interior. The roof is supported by circular principals, which are exposed and carved. Messrs. Cramer and Co. have opened a communication with a portion of the building that was formerly the Agricultural Bank, and also with their premises in Fleet-street, so that the entire concern is now one of the largest music warehouses in the Kingdom.

Mr. William G. Murray, of Lr. Gardiner-street, was the architect, and Messrs. Crowe, Gt. Brunswick-street, the contractors. The grates, hot-water apparatus, and chimney-pieces were supplied by Messrs. Maguire and Sons, of Dawson-street. The firm of Alderman Gregg and Son, of Sackville-street and Great Brunswick-street, supplied the gas-fittings. The mahogany fittings and counters were manufactured by Messrs. Byrne and Sons, of Henry-street.

CHURCH OF ST. BARNABAS, NORTH LOTS.

THIS church (of which we gave an illustration in our number for 15th April last) was consecrated on Monday by the Archbishop of Dublin. It is in what is termed the Perpendicular Gothic style, and consists of nave, 80 ft. by 32 ft. 6 in.; and chancel, 20 ft. by 18 ft. Advantage was taken by the architect of a fall in the ground towards the north, by which a vestry-room has been provided immediately under the chancel. At the south-east of the building rises a tower 135 ft. in height, and 15 ft. square, with handsome spirelets at each angle. In this is placed the principal entrance to the church. The material used is black stone with dressings of Bath stone. The church is fitted with open benches calculated to seat about 500 persons. The entire woodwork is stained and varnished. The works have been carried out from the designs and under the superintendence of Mr. A. G. Jones, of Molesworth-street. Messrs. Gahan and Son, of White-church, Rathfarnham, were the contractors. The cost was over £4,000, and was paid out of a large sum bequeathed by the late Miss Shannon, of Rathmines, placed in the hands of trustees for the erection of three churches in such localities as stood in need of church accommodation. Adjoining the church substantial school buildings have been erected at the expense of J. B. Ball, Esq., Merrion-square, under the same architect and contractors, the cost of which was about £900.

THE ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND.

THERE was an ordinary general meeting of the Institute on Thursday evening, the 20th ult. The chair was occupied by

Mr. J. H. OWEN, M.A., President.

The honorary secretary, Mr. Thomas Drew, A.R.H.A., read a letter from Sir Wm. Wilde, relative to a communication which he desired to lay before the Institute as to the life and labours of Gabriel Beranger, an Irish antiquary of the last century, and a collection of whose remarkable drawings was at present temporarily in Sir William's possession. It was resolved to request Sir William Wilde to favor a future meeting with his most interesting communication.

The chairman remarked that the specimens received of Donegal granites were very inferior ones indeed, and conveyed but a poor idea of that beautiful material.

The drawings submitted for the Fitzgerald medal and prize were exhibited preparatory to their being adjudicated on by the council, and excited considerable interest. The subjects delineated being selected from some of the most interesting of Irish ecclesiastical antiquities.

A warm discussion on the paper recently read by the President on the subject of "Damp," ensued, in which the chairman, Messrs. Drew, Carson, Caldbeck, Geoghegan, Doolin, Hodges, and others took part, shortly after which the meeting separated.

MONOGRAMS.[*]

WHAT is a monogram? Oh, it is your initials twisted together, so that nobody can read them, and then stamped on your note-paper.

This is a fair description of a monogram according to the received notion in this nineteenth century. Most people would be greatly astonished to be told that these interlaced letters are not monograms at all. They may be polygrams—but monograms they are not.

The word monogram, as every one knows, signifies a single letter or symbol *monos*, single; *gramma*, letter). Strictly speaking, then, a monogram is a combination of two or more letters combined so as to form a single symbol. The diphthongs Œ and Æ, for instance, are pure monograms, and so also is the ampersand (&).

Diphthonged letters were probably first used in translating from Greek into Latin. In Greek writing, when vowels were written side by side, but sounded together, the vowels were kept separate; but in Latin writing, some of them were joined together, as in the diphthongs just quoted. Indeed, the mediæval monks employed numerous contractions, some monogrammatic, some not, principally for the purpose of saving labour and space. The most familiar example of these contractions is the ampersand, which is a pure monogram of the Latin word *et* (and), so contrived that it can be written by a single stroke of the pen. In the italic ampersand (*&*), still employed in typography, the letters E T can clearly be traced. Similar contractions are common in oriental writing. In Hebrew epistolary correspondence, which commences with 'By the help of God' (*Beesrath Hashem*), these words are represented by a pure monogram composed of the letters B H.

The foregoing examples shew what is meant by a pure monogram. They are not given as illustrations of the early use of monograms, or of joined letters. These are of much antiquity. Mr. Berri, in his *Monograms Historical and Practical*, gives it as his opinion that such devices took their origin from Egyptian hieroglyphics. Take, for example, the triple *tau* or T, which among the Hebrews was the sign of security. The origin of the *tau* is lost; but some writers assert that it was the form of the Egyptian Nilometer, used to ascertain the height of the waters of the Nile, upon which depended the sustenance and lives of the inhabitants of Egypt. But, remarks Mr. Berri, 'whatever might have been its origin, whether it was derived from the Nilometer or the Egyptian Trinity, that simple mark has been handed down from age to age.'

The Israelites bore this symbol on their banners, sometimes singly, sometimes triply.

It is said to be referred to in Ezekiel ix. 6: 'Slay utterly old and young, both maids, and little children, and women: but come not near any man upon whom is the *mark*.' This mark was also called the letter of life, and among the Greeks the token of absolution, because prisoners or culprits upon whom this mark was placed had their lives spared.

In modern times, the same sign or monogram, if it may be so called, is, according to some authorities, found in heraldry in the form of the St. Anthony's cross, so called because that saint always bore this device on his habit. This form of the *tau* implies that 'he who beareth it is a stay or supporter of his prince, and an upholder of the Christian faith.'

Astle, in *The Origin and Progress of Writing*, informs us that monograms were anciently used in Syria, Egypt, and Greece, and he gives numerous examples of joined letters taken from early Greek manuscripts, though none from Syriac or Egyptian.

Joined letters are also found on early Greek coins. Prior to the Macedonian epoch, it seems to have been the custom to stamp on coins the first two or three letters of the name of the place of minting. These letters were all distinct and separate; but the Greeks, not having the advantage of steel dies, the letters in the later impressions became more or less joined together, owing to the softness of the matrix. It is possible, and even probable, that this accident gave rise to the idea of saving lines by engraving the letters in a monogrammatic form. Be this as it may, it is well known that about the time of Alexander I. of Macedon (500 B.C.), the practice of stamping monograms on coins first came into vogue.

From the Greeks, the practice of monogrammatic abbreviation descended to the Etruscans and Romans, and through them to all the nations of civilized Europe. Ducange, in his *Glossarium*, gives a plate with numerous examples of monograms used by emperors, popes, &c., from the time of Hadrian (beginning of the second century) downwards. The sacred monogram or *chrismon* was extensively used by Constantine (fourth century). The principal banner of the army under that emperor, supported at the summit of the pike a crown of gold, enclosing the chrismon or mysterious monogram, at once expressive of the figure of the cross and of the name of Christ (Gibbon, *Decline and Fall*, chap. xx., Note). The 'mysterious monogram' was nothing more nor less than the letters *Chi*, *Rho* (χ ρ), the first two letters of the word *Christos* joined together. It was used by Constantine probably as a political measure for increasing his popularity, when he saw that the Christian religion was extending in spite of the fiercest persecutions; but the legend is that this emperor saw a vision in the heavens, composed of the words, '*In hoc signo vinces*,' surrounding the cross or monogram referred to, and that he then adopted this symbol to mark his conversion to Christianity.

The chrismon is said to be of much more ancient date than the time of Constantine. It is supposed by some to symbolise the Egyptian deity Osiris. However this may be, modern critics are of opinion that similar signs were stamped on Greek coins, and displayed on the *labarum*, or Roman standard, before the date of the vision of Constantine. The chrismon certainly appears carved on tombs in the Catacombs at Rome, which belong to a period anterior to that of Constantine; and the inference seems to be that that monarch merely brought the symbol into more general use. It is said by Mr. Berri that the sacred monogram never appeared on coins of Constantine, though it did on those of his sons and successors. Barclay, in his *Monograms*, gives facsimiles of two coins of the Constantine period, on which are seen figures of the emperor bearing the labarum, and displaying the chrismon.

The use of this symbol was continued by the popes. In the time of St. Augustine, it was generally placed at the beginning of letters; and in the middle ages (beginning, according to Hallam, 486 A.D.), the chrismon was often added to signatures at the foot of deeds. It was thus employed by way of oath on the part of the writers or signers, as was the cross afterwards used by the Saxon kings. This was similar to the cross which in the present day is attached by Roman Catholic prelates to their signatures, and to the mark used by illiterate persons.

Monograms are frequent on Roman coins of the fifth and subsequent centuries, where they not unfrequently fill the whole field. About this time, monogrammatic treatment of names seems to have become common, the early kings of France and Italy, and other sovereigns, using monograms for signatures. The early French kings left the monograms to be written by their secretaries, except where the first person was used, when the signature was made by the king himself.

Charlemagne (742—814 A.D.) had a variety of monograms, as is shewn by examination of the manuscripts of his time. The sacred monogram appears on his coins. It is said that he was the first to sign documents with a monogram made by means of a thin perforated plate, as in stencilling, or by means of a stamp with the characters engraved in relief. Pope Leo III., who was contemporary with Charlemagne, incorporated the chrismon with his name. An example is given by Ducange. Indeed, about this period (ninth, tenth, and eleventh centuries), kings, nobles, and the higher clergy almost always used monogrammatic signatures. The scaffold-like look of the perpendiculars of the Roman letters gave the monograms of this date a very ugly appearance. The later the period, the more crowded, unconnected, and unreadable monograms became, until, at the end of the tenth century, monograms as royal signatures began to fall into disuse. Robert II. of France (996 A.D.) did not always use them; Philip I. (1060 A.D.), rarely. Their use finally died out in France in the time of Charles IV. (1322 A.D.)

In Italy, monograms went out about the same time; but in Germany they were in vogue for some two centuries later. They, however, lost their imperial dignity, being freely used by merchants to mark their goods (merchants' marks).

Monograms were scarcely ever used by the kings of Spain or England. Monograms did not come into general use in England till the fifteenth and sixteenth centuries, when they were commonly associated with merchants' marks. These marks were, as a rule, very obscure and ambiguous, and constructed without any system. They were used by wool-merchants and other traders, and examples of them may still be found scattered about the country, especially carved in churches, in commemoration of the individuals who contributed to building those edifices. Some of the earliest, belonging to the first half of the fourteenth century, are to be found in Norwich (see publications of the Norwich Archæological Association); and many, a little later, at Hitchin Church; St. Margaret's, Lynn; St. John the Baptist and Redcliffe churches, Bristol; the old church at Doncaster; the old church, Hull; and elsewhere.

Printers' marks seem to have been suggested by merchants' marks. In the first instance, they were generally of the kind called the *rebus*, such as we now see when a bee is put for the letter B. Printers' marks were soon after most elaborately decorated, the monogrammatic portion only occupying a small shield in a large field of ornament. The use of printers' marks still continues; indeed, one can hardly take up a book now-a-days without finding the initials of the publishers (who are also frequently the printers) embellishing the title-page in the purest style of nineteenth century art.

The last use of monograms in this country, prior to their recent revival, was upon tradesmen's tokens, where they not unfrequently appear.

So much for the history of the monogram. In a pure monogram, such as those used in contracted writing, the point aimed at, as before remarked, is a saving of lines. But where ornamentation is the object, as in the modern so-called monogram, but more correctly polygram, there is no occasion to save lines, if a more agreeable effect can be produced by using them. Now, it is a fact well known to designers that interlacing lines and broken surfaces are pleasing to the eye. Why this is so, can scarcely be explained; but if the fact is admitted, then there can be no reason why we should not gratify the sense of sight by designing polygrams rather than pure monograms. The only pity is that the word should be so loosely used, and that we should persist in speaking of designs which are not monogrammatic, as though they were.

MONUMENTAL.

It is proposed to erect a monument to perpetuate the memory of the Rev. P. Clarke, Adm., St. Mary's Catholic Church, Belfast, who died recently. For this purpose a sum of £400 has already been collected by private subscription. It is intended to erect a memorial chapel over his grave in the new Catholic cemetery; and if a sufficient sum is left after doing so, to erect a side altar in St. Mary's Church, which was rebuilt mainly through the exertions of the respected deceased.

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[*] From *Chambers' Journal*, part lxxii.

PUBLIC WORKS IN THE SOUTH AND WEST OF IRELAND.

No. 2.

In a sanitary point of view, the site of Ballinrobe cannot be surpassed by any other town in the west of Ireland. It is situated on both sides of the River Robe, which, after a zigzag course of 50 miles, empties itself into "Broad Lough Mask," about two miles west of Ballinrobe. This river, from Crossboyne westwards, has undergone many improvements under the Board of Public Works. A considerable portion of the land through which it flows used to be flooded for five or six months in the year. Many of these lands are now good arable farms, and "blossoming like the rose."

The stone bridges—Hollymount to Ballinrobe and the *embouchure* of the Robe—are very well-built structures. I cannot say as much for the iron ones, which are rather weak. The girders are (in my judgment) too slight for any large amount of traffic. Those bridges should be painted once every two years, by order of the county surveyor of the district.

Ballinrobe does not possess quite 3,000 inhabitants. It is a neat, well-built town. There are many corporate towns in the kingdom whose thoroughfares are not so well kept as are those of Ballinrobe. There is a considerable amount of local traffic, owing to the bogs which almost encircle it. I have witnessed the streets macadamised on a Saturday evening, and on the following Tuesday there was scarcely a pebble perceptible. At times one may behold no less than a quarter of a mile in length of carts laden most mercilessly to an incredible height with what are called "Mieulls," each cart-load weighing with its cart about 15 cwt.

The road contractor at Ballinrobe is but poorly paid; 2s. 6d. a perch at least should be paid him; I question if he gets more than one-half that sum. The Grand Jury Laws of Ireland should be altered, in as much as the *lowest* tender must be accepted, no matter who or what the contractor may be. I have known contracts accepted from parties having no certain place of residence in the county, and *minus* any chattels whatever! Again, the assistant county surveyors are but miserably paid, the maximum salary being £80 per annum, while the minimum averages as low as £35. This should not be tolerated much longer, and I would be glad to hear that "The Assistant County Surveyors' Association" will, by-and-bye, have their just claims heard and discussed to their advantage in the House of Commons by the deputies (M.P.'s) from Ireland.

Ballinrobe is built on two eminences, the river flowing ceaselessly between them. It has two barracks; the one for infantry nearest the town bridge, with the barrack-green, which contains thirty or forty acres, between it and the cavalry barracks, from which it is separated by a very fine stone bridge of but one arch almost semicircular. The Robe murmurs at the base of both barracks. One gets splendid views of the mountains and of Lough Mask from the Green. For salubrity of climate, cheapness of the necessaries of life, and the superior quality of forage, there is no station in Ireland comparable to this long-neglected place, which, in the time of Lord Tyrawly, was the ancient capital of Mayo, and head quarters for a cavalry regiment. At present there is a squadron of cavalry quartered there, and a detachment of, I believe, the 40th infantry. I understand this has been brought about through the influence of the landlord of the town, Mr. Knox, who is aid-de-camp to the Lord Lieutenant.

Ballinrobe is remarkable of late years for the elegant taste displayed in its shops. Articles of *bijouterie*, fancy pipes, gold and silver mounted lamps and saddlery, the most modern mixtures of mild tobacco and cigars, can be had in this little town as cheap and as good as in either London or Dublin; and as to the prices of fresh meat, I must confess I was myself the purchaser of a quarter of lamb, first-class, for 4d. per lb., which was selling in other parts of Ireland at the same time for 7½d. per lb.

The town is supplied with two breweries, and an excellent hotel kept by Mr. Valkenberg. There are two places of worship—that for Roman Catholics is new, and is but a feeble attempt at the "Pugin" style! so much in vogue at present.

One of the Roman Catholic burial-places is at what is called the Abbey, formerly an Augustinian monastery; this is a large building, but has no pretensions to architectural ornament whatever. In the eastern gable there was an attempt made by the architect of the day to put in a very lofty window, which was not carried out, a much smaller one having been substituted. "The Abbey" is situated on the east side of the Robe, whilst the other resting-place of the faithful is on the west side of the river, and is called "Temple Mor" (the big church). The latter is not worth notice in an architectural point of view.

The principal streets of the town are nicely flagged throughout.

Westport, &c., in my next. C.E.

THE BULGING OF WALLS.—CAUSE AND PREVENTION.

THE ugly protruding curvature commonly called a bulge, to which external and front walls seem especially subject, may frequently be traced to original defects of construction. Bulges very often occur at about the level of a floor, and where there is a floor, the brickwork of outer walls is commonly weakest. To avoid running the floor-timbers into party walls, they are generally made to rest on the front and back, and the party-wall will often appear in better condition than the front. Immediately below the level of the intended floor, a timber scantling about 4½in. by 3in. is laid along the wall flush with its inner face, to receive the ends of the joists. The joists, let it be assumed, are about ten inches deep, notched to nine inches at the ends, so as to rise the height of three courses of brickwork. Here, then, bond-timber and joists together make a height of 12 in., or four courses of brickwork. The joists will have a bearing of 6in. on the wall, and the wall may be supposed to be a brick and a half thick. Now wherever the joists occur, there is a complete interruption of the bond on the inner side of the work, while externally it appears unbroken, the outer face, in fact, being carried up half a brick in thickness, and looking as though the whole wall were perfectly solid and uniform; but the backing between the timbers too often consists of bats and small pieces put together in a mysterious though incongruous way. So long as the timber remains sound and of its full dimensions, all is well, but this is seldom very long. The manner of converting balk timber into scantlings precludes the permanent retention of its original form. When felled and squared in its native forests, it is thrown into the first lake or river, formed into rafts, and navigated to some port of shipment, where it is formed into cargoes for conveyance across the ocean. The sea voyage over, it may be assumed to the port of London, the timber is again immersed in the water, which usually constitutes its only place of storage till wanted for actual application to some building. As to deals, an architect may specify dryness as a necessary quality, but he must not expect it in timber. He may say that it shall be sound and well seasoned, but water-seasoning is all that takes place previous to conversion, and this fact is noteworthy, because as the subsequent shrinkage may be estimated at three-quarters of an inch in the foot, it becomes obvious that so far as the bond timber and joists are to be regarded as forming the inner material of the wall, a subsidence equal to the shrinkage must take place. But the wall does not depend on the woodwork alone, and the irregular filling up between the joists will receive the weight, and so the evil will be deferred. For the time there may be no other visible result than the dropping of the floor from the skirting, and when the latter is of wood, the simultaneous rising of the skirting from the floor. It is when the wooden bond, having shrunk to the minimum dimension of perfect dryness, enters upon its course of decay that the worst consequences of inserting timber constructionally in walls are developed. The inner face then sinks, and the statical conditions are disturbed, and bulging is inevitable. It was a custom of bygone days to insert timber very freely in walls. Foundations were fortified, as it was thought, by the introduction of a "chain-bond" of large scantling, and many a goodly edifice has suffered from the practice. Great therefore, have been the improvements adopted in the modern construction of walls. A solid basis is obtained by the use of concrete; wrought iron hooping has advantageously displaced wooden bond, and the joists are kept as much as possible out of the walls, their ends being supported by brick or iron corbels. Thus all rapidly perishable matters are excluded, and a lasting character imparted to work so executed. Skirtings also are made of stucco instead of wood, and shrinkage in that quarter got rid of. Thus experience and science are gradually removing one of the old defects and disfigurements of buildings—the bulging of walls.—*Building News.*

PERILS OF THE RAIL ON THE ROCKY MOUNTAINS.

THE following is a portion of a letter published in the *Coleraine Chronicle*; it describes a scene which we suppose is of almost daily occurrence:—"I am now stationed on the Railway at Unitah, a small Mormon town at the mouth of the Weber Canon, the name of the fearful pass of the Rocky Mountains, down which the railway takes its way to pass from the eastern to the western portion of the American continent. You can guess the danger of this piece of road, when I tell you that in every mile there is a fall of from 80 to 100 feet. The party to which I belong has charge of this road at its most dangerous point. My party consists of two engineers, one foreman, section master (myself), and twenty-five labourers. My duty is to see that this piece of track is run up and down every day, and to see that it is all in order. We have an engine and car of our own. Besides this party, watchmen are constantly walking day and night, and every rail and screw is examined daily. The other day a land slide covered the metals at a sharp point, where the track is cut in a perpendicular, wall of rock 500 feet high—the road being 200 feet above the River Weber. We made all haste, but found that we could not clear the track in time for a passenger train just due, and should she come on, no power on earth could save her from being dashed 200 ft. down the rocks! There was a point half-a-mile a-head, where the train could be stopped, and there only. I snatched up the red flag, and started on foot. The snow was deep, and a wind blowing, against which it was almost impossible to walk. I was about three-fourths of the way when, to my horror, I heard a whistle a little way a-head, and I saw the watchman was not at his post. I knew the peril, and strained every nerve. Just as I almost reached the point, I fairly sunk on one knee from the force of the wind. A shout from the man encouraged me. A rock stood out some distance over the precipice, and I knew if I reached it I could see the advancing train. It was a perilous leap; but, gathering myself up, I called on Heaven for help, and almost before I knew it, I was safe in sight. And oh! how I thanked God to hear the engine whistle 'down brakes.' Had I been one moment later, it is fearful to contemplate the result!! . . . . . If spared, I am offered a good position in New Mexico, on the Memphis and El Paso Railway; but if I find it to my advantage, I shall remain where I am. I have an affection for this mighty railway, across which the commerce of China and India is to roll, built has it has been, I may say, by Irish hands, and of which we are not a little proud."

COMMERCIAL ENTERPRISE.

OUR second illustration shows the Green Works of the Belfast Portland Cement Company at Carnmoney. The motive power for the Green Works is obtained in the locality from the Carnmoney River, which at the place was formerly diverted to work the Manor mill, for grinding corn and other grain. The power is developed by a turbine waterwheel, from the designs of Mr. John A. Smith, C.E., Belfast, under whose superintendence it was constructed and erected. The arrangement of the power for the various purposes of crushing, grinding, pumping, hoisting, and transporting, is in many respects novel and unusually perfect in itself. The materials for the manufacture are obtained in the neighbourhood of the Green Works, to which they will be conveyed on railways shown in the illustration. These materials, after undergoing the first process of manufacture at Carnmoney, are to be conducted by pipes to the lower manufacturing works of the company, adjacent to the Greencastle station of the Northern Counties Railway, which latter works are now in a forward state, and, from their novel features, have attracted much attention. We hope to be able to give an illustration of the lower manufacturing works of the cement company in a future number of this journal. The Green Works occupy about four and a-half acres. The lower works, when completed, will occupy about fifteen acres. The company have been fortunate in their negotiations for title to the lands and materials; and from the completeness of the arrangements for the manufacture and the terms on which the company hold the lands and materials, there is certainty of the Belfast company proving a splendid success, not only with respect to the superior excellence of the article they can produce from the unequalled materials they command, but also with respect to commercial remuneration.

The progress of the investigations in this case is instructive, and we therefore give a sketch of it. Several years ago the late Mr. M'Kibbin, of Belfast, commenced the manufacture of cement at Belfast. The manufacture was a partial success; but there were many drawbacks to injure the article and injuriously prejudice the speculation. The gentleman we have named ceased to superintend or be concerned in the manufacture, which in a short time ceased to be. There were many shortcomings not fully understood or appreciated. After some time the deceased gentleman made the acquaintance of Mr. J. A. Smith, C.E., and from that time a more accurate knowledge of the drawbacks and requirements was obtained. Investigation and enquiry, properly directed, placed the question on a satisfactory footing, and eventuated in the present company undertaking the manufacture on a large scale. Just when the works were being designed by Mr. Smith, C.E., Mr. M'Kibbin died. Fortunately for the company, Mr. Smith was still available; and as he had all the matters before him, being the designer of the arrangements, the progress of the manufacturing works was not delayed. The details are in many respects different to those in other works for the like purpose, so that the works of the Belfast Portland Cement Company will be the most complete and perfect for the manufacture of cement ever yet designed and executed.

A NOVEL LAND QUESTION.

SOME months ago we announced that the Dundalk Harbour Board had resolved on constructing a patent slip or graving dock; for this purpose recent application was made to the Board of Trade for a grant or lease of a portion of reclaimed foreshore. The following reply thereto has been received by the Harbour Board's Solicitor :—

> SIR,—I am directed by the Board of Trade to acknowledge your letter of the 3rd inst., renewing your application previously made by the Dundalk Harbour Commissioners for a grant or lease of a portion of the foreshore of Dundalk Harbour, reclaimed by the Commissioners in the course of their operations during the past twenty-five years. In reply, I am directed to inform you that, with every wish to meet the views of the Harbour Commissioners in this matter, the Board of Trade are advised that they are unable to make a title to the foreshore in question.
>
> C. CECIL TREVOR.

At the meeting of the Harbour Board on the 14th ult. this letter was deemed to be conclusive as to Lord Roden's right to the foreshore reclaimed, consisting of about eighty acres, and it was decided that an application should be made to his lordship for the grant or lease of a site upon it for the construction of a slip or graving dock as may be agreed upon.

The following particulars in reference to this question have appeared in the *Newry Telegraph*:—For the last twenty years a great deal of improvements have been carried out in Dundalk Harbour, one of the most important works being the construction of an embankment on the south side of the river, and extending from the Steampacket Quay towards the mouth of the harbour, for a distance of about seven thousand feet. This embankment was designed and constructed from the plans of Mr. Telford, the eminent engineer, in conjunction with Sir John Macneill. The cost is said to have amounted to £20,000, and, together with the other sums expended on the river, at least £100,000 has been sunk in improvements. By the construction of the embankment on the south side of the river, there were from 80 to 100 acres of land reclaimed, and which promises in a short time to become a valuable property. The Harbour Board for a considerable time seemed to think that as the land was reclaimed by the expenditure of their money, that it was their property; or if the Crown put in a claim, that it would be made over to them for a nominal sum. The Board, however, were disagreeably surprised to find that the Earl of Roden assumed the rights of a landlord over the reclaimed foreshore—setting up boards warning off trespassers; and also putting some animals to graze upon the land. A great deal of dissatisfaction was created by these proceedings on the part of his lordship, and from time to time there were angry debates at the Harbour Board respecting them; and ultimately some of the members, in their private capacity, brought the matter under the notice of the Harbour Department of the Board of Trade. The Board of Trade did cause some inquiries to be made, but nothing came of them; but the Harbour Board still held that they must obtain the reclaimed land in order to recoup them for their outlay. The matter, however, lay over until within the last few weeks, when the chairman started the project of constructing a patent slip, or graving dock, for the use of the port, and a formal application was then made to the Board of Trade for a grant or lease of a portion of the reclaimed land whereon to construct the slip. A good deal of mortification is felt by some members of the Board, and also by the townspeople, that the effect of the large expenditure of public money was to enhance the value of the Earl of Roden's property. His lordship held the property under a special grant or charter of James I. to Sir Henry Bagnal, Lord Deputy of Ireland in that reign, and it appears that the foreshore was included in this grant, in addition to all other manorial rights.

SHAM COMPETITIONS.[*]

IT would be very difficult to form an adequate estimate of the advantages modern society has derived from the existence of competition. It has been called the life of business, and it is almost always evident that where it is absent, or not in active exercise, business becomes torpid, slow, and profitless. From the times and scenes of the Olympic Games to the last spelling match in the district school, it has called into play faculties and energies that would have remained dormant and useless had they not heard its clarion voice. Its subtle force enters into every department of human action, and intensifies every power with which our nature is endowed, making the good better, or the bad worse, to the perfection or excellence of depravity.

Art has always been indebted to it, if not for its existence, certainly for its development and progress. Perhaps the most transcendently glorious moment in the life of any artist is that when, for the first time, he has awarded to him the medal of the institution where he studies—that patent of excellence over his fellows which for the time seems more to him than life itself. There may be some fields of human endeavour where everything would get along well enough without the emulations and rivalries of competitions; but schools of design—the birthplace and arena of young art—are not in the catagory. There all the first efforts of the young artist are made to equal or excel some copy, or rival, ahead of him. Competition is the very breath of his life; and this continues to be true of the artist through all his subsequent career. Perhaps there was never a work of art of any excellence designed or executed in which the underlying motive of the artist was not to excel the work of some rival. In all this we see the workings of a law that not only pervades all human actions, but seems to extend through all things. The music of the groves is but the harmonies of song by rival performers among the feathered tribes. The billows of old ocean are but competitive waves; and we have the word of inspiration to assure us that "one star differeth from another star in glory."

It follows, therefore, that in the nature of things we should look for the workings of this law of competition among architects; and we may accept it as a fact that those will have the largest and best practice who are esteemed by the building public to be the best architects. But it does not follow that those who are so esteemed are indeed the best architects. Gray, in his Elegy, refers to the possibility of some "mute, inglorious Miltou," as sleeping his last sleep among the rustics of his country churchyard. Inglorious because mute, and so unknown to his cotemporaries. So some architects may be found, of the highest genius, who are unappreciated and unemployed because unknown. This fact has been long recognized, and efforts have been made to obviate the hardships it involves. The most prominent of these efforts, by parties outside the profession, have been to invite competition in designs for contemplated buildings, and the result has been that a large number of successful architects all over the world have been indebted to such competitions for gaining their first step on the ladder of fame.

Few architects at the present time would have anything to say against competitions, or object to participate in them, if there were undoubted guarantees of fair treatment and a just decision in every case. It would be difficult, and aside from our present purpose, to indicate all the conditions and terms to be observed in order to secure this result. There are, however, some conditions so necessary to be complied with, that wherever they are omitted or disregarded, a competition necessarily becomes a delusion and a snare—a sham competition.

The first of these conditions is, that the judges by whom the awards are to be made shall be competent to form a correct judgment of the designs submitted, in reference to their artistic merits, to the fitness of the building designed for its intended purposes, and last, but not least, with regard to its cost. A second condition is, that the judges be honest men, who will judge of the plans by their merits, and rigidly enforce the terms on which the competition is invited. These conditions are cardinal and essential, and

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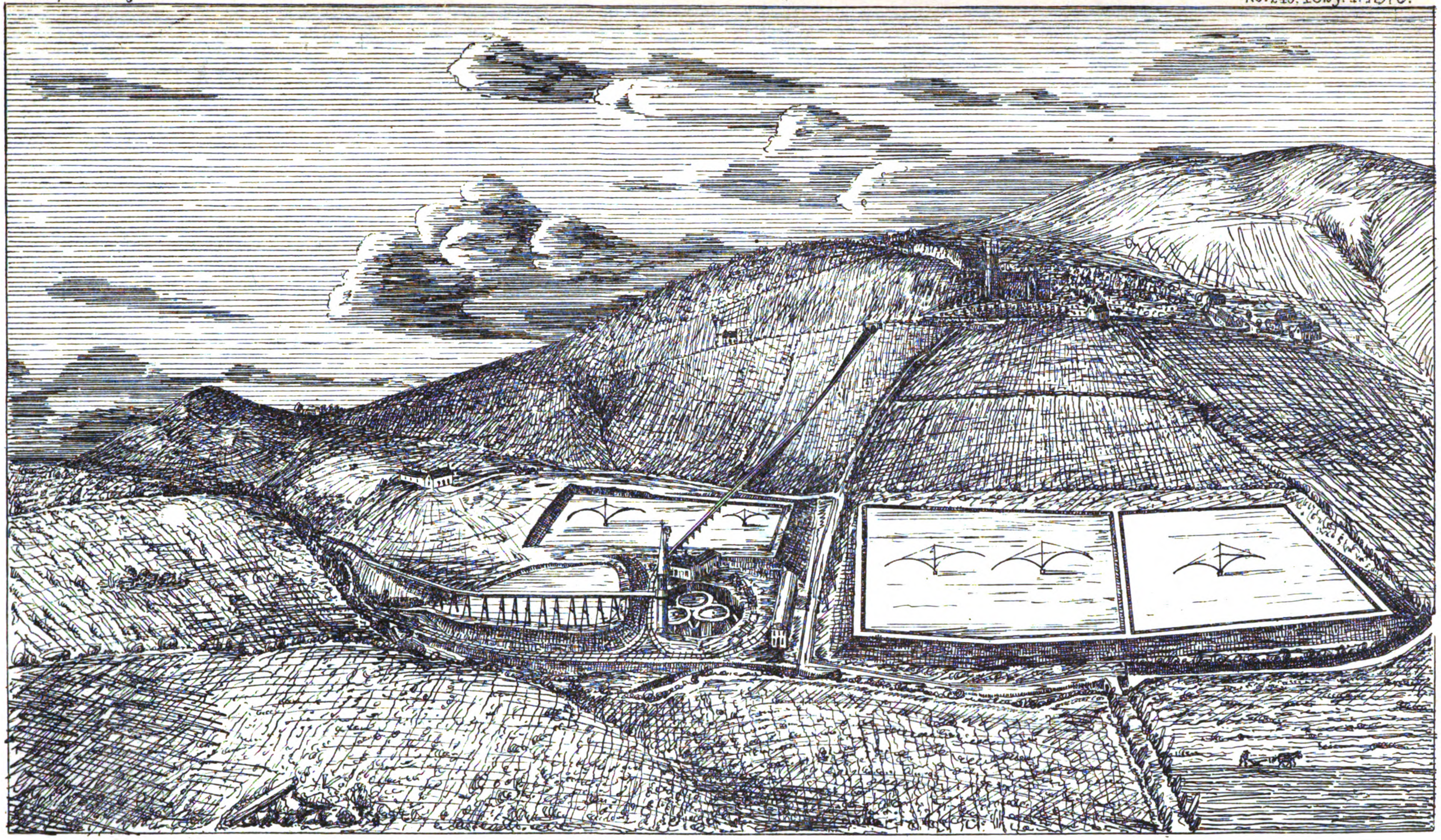
[*] From the *American Builder.*



The Belfast Portland Cement Co's Green Works, Carnmoney.

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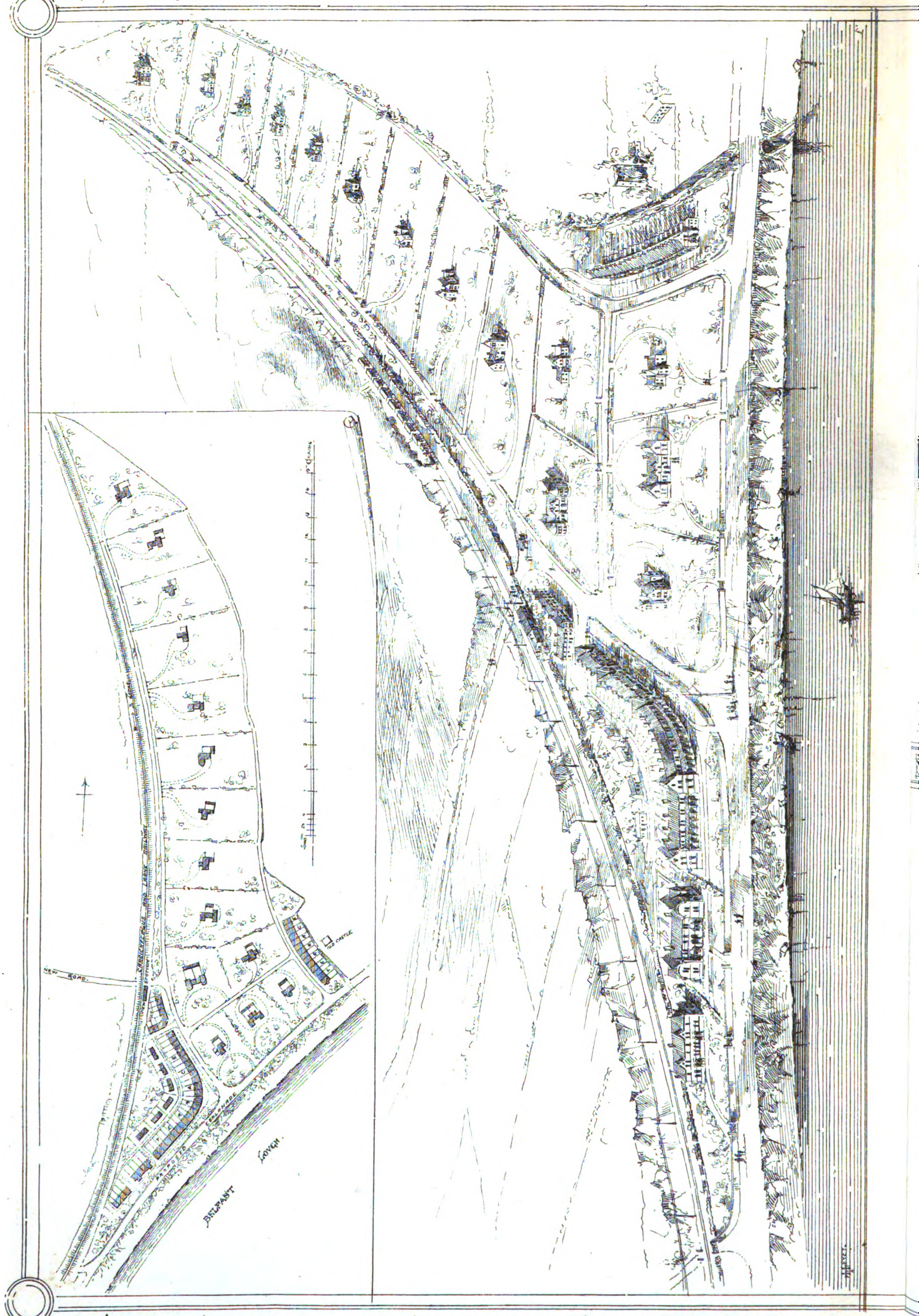
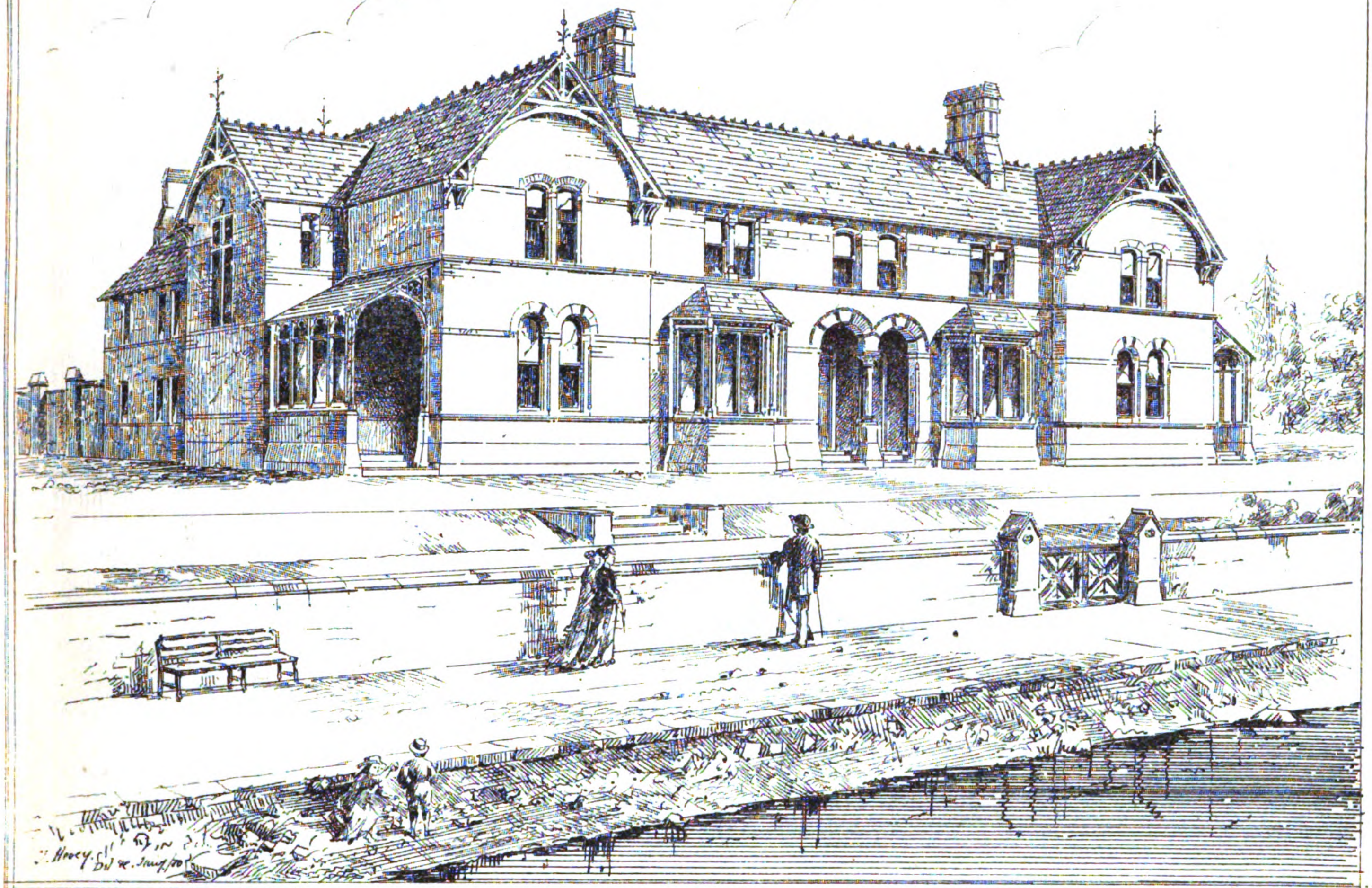
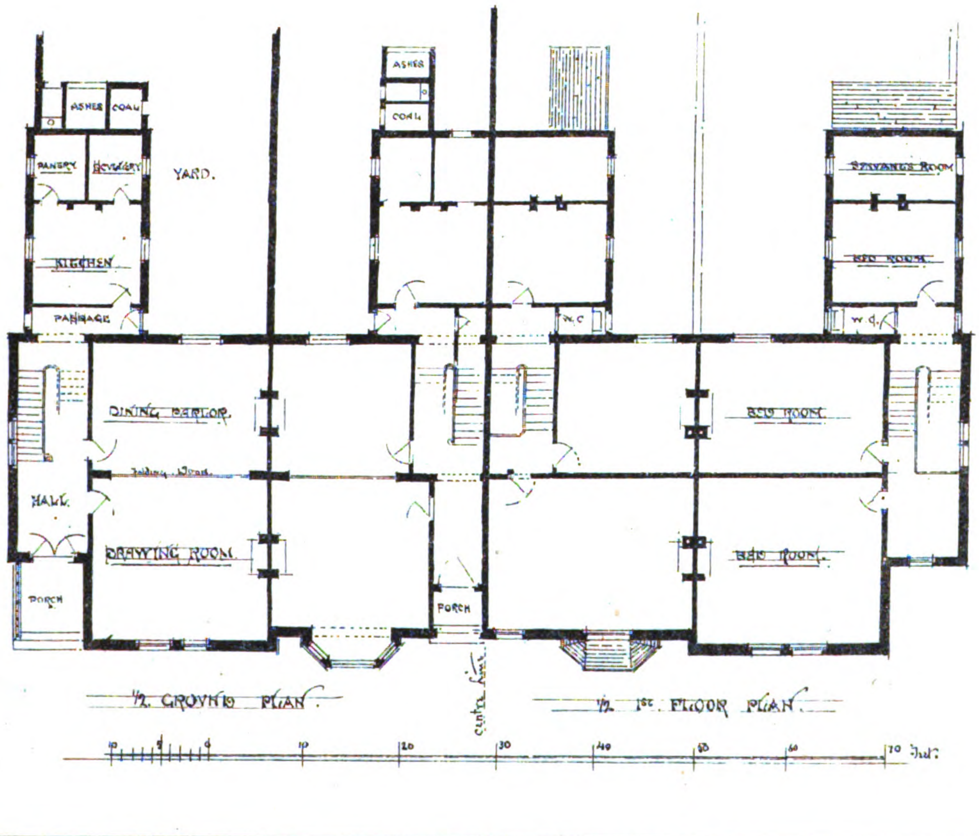
The Irish Builder.



CHICHESTER-BY-THE-SEA, WHITEHEAD — the property of HUGH



SKETCH. SHEWING BLOCK OF FOUR HOUSES T. HEVEY. ARCHITECT.



ANDREWS ESQ. laid out for Building Purposes. by T. HEVEY. Architect. 12 Linenhall St. Belfast.

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whenever they are not complied with there is no hope whatever that the competition will be otherwise than a fraudulent or ignorant sham.

In Europe, for the most part these conditions are more or less perfectly complied with, and as a rule the best designs are preferred; but, in this country, it rarely happens that any effort is made to secure competent judges. Awards are made by committees of men who are politicians, or men of wealth, or position, or prominence, but who know nothing of architecture. These are appointed, and are quite ready to act, their ignorance preventing them from realizing their unfitness for their work. Such men, if called on to decide between the merits of a painting by Raphael and a copy by some modern daubist, would, in nineteen cases out of twenty, prefer the latter, for the simple reason that their perceptive faculties in art matters are dormant or perverted; consequently, the meretricious and depraved is more consonant with their esthetic state than the true and beautiful.

And so in all art matters, but most of all in architecture, men without art education and culture will be more than likely to prefer the false to the true. And such are the men who are appointed to sit in judgment on architectural designs. Of course, such competitions are shams. But the incompetence of committees is their least fault. So notoriously unfair are the doings of associated men, that their wrong-doing has suggested, and too often justifies, the proverb that "corporations have no souls." During the few years that competitions have been known among us, so rapid has been our descent in depravity in this respect that, for the most part, when competitive designs for a public building are called for, old and knowing architects are aware that the competition is not one of architectural skill, but of chicanery, and wire-pulling; of private influence, and sometimes even of power, to purchase the support and suffrages of committee men. The inquiry, therefore, that such architects make is not one having reference to their professional ability, but to their chances of influencing committee men. Verily, such competitions are shams. Every right-minded man must bitterly regret that a measure first devised and adopted by beneficent men to call out latent talent, and give to genius its opportunity, should be so perverted as to answer no higher purpose than it now does.

So universal are the evils referred to, that every member of the profession who still possesses honor and virtue must either avoid the thing as a pest, or unite in some measure to reform the abuse. We must either have real competitions or none.

The thing has to be stopped or reformed; if for no other reason, at least for this, that it is mischievous and hurtful, and brings discredit to the profession at large.

THE ARCHITECTURAL PUBLICATION SOCIETY'S DICTIONARY OF ARCHITECTURE.

WE *(Builder)* are glad to believe that the completion of the Dictionary is now fairly assured.

A special general meeting of the subscribers was held at the House, in Conduit-street, on the 19th of January; Mr. T. H. Wyatt, in the chair.

Mr. Arthur Cates, the hon. secretary, read a report from the committee, which congratulated the members on the complete discharge of all debts and liabilities, and the possession of a cash balance of upwards of £150, available for the prosecution of the Dictionary. The result of the exertions made to obtain new subscribers, so as to secure the completion of the Dictionary, was reported as having been attended with remarkable success, only sixty-seven names being now required to fill up the list; and as new adhesions were still coming in, the committee recommended the subscribers to authorise the immediate undertaking of the work of completion, relying on the continued exertions of the members to secure the additional subscribers still required.

The chairman said he need trouble the meeting with but few observations on this matter. They all felt the great importance of completing this work which, as far as it had yet gone, had done great honour to the profession, though he felt in common with them all that the great share of labour and responsibility had fallen upon two or three gentlemen. The work having gone to the length it had, it would be a great pity it should now lapse for want of a little individual energy on the part of the general body of the subscribers. Extraordinary energy had been displayed by three or four gentlemen since the annual meeting: as an instance of that he mentioned that Mr. Corson, of Leeds, had recently gained not less than eight new subscribers; and Mr. William Burn had used his influence greatly to the advantage of the society. Accessions to the list had also been made by the exertions of Mr. Abbot, of Sheffield, and Mr. Burnet, of Glasgow, Mr. Horace Jones, Mr. C. F. Hayward, Mr. D. C. Nichols, and many others. A little more energy in the early part of the present year, he was quite certain, would result in the completion of the subscription list to the point fixed upon; and he had no doubt the committee would have the pleasure of announcing before the next annual meeting that the list was complete. He was happy to say that several of the large builders and contractors had recently become subscribers, and in some cases a copy was subscribed for by the individual members of firms.

Several members expressed the strongest hopes with regard to the speedy completion of the subscription list and the immediate continuation of the publication. Cordial votes of thanks to the hon. secretary of the society (Mr. Cates), and to the hon. secretary of the Dictionary (Mr. W. Papworth), for their past labours and those which they had promised for the future, were passed unanimously.

Mr. Sydney Smirke said he could not allow the opportunity to pass without bearing his personal testimony to the great services rendered by the hon. secretaries. He had seen so much of them in this matter that he could truly say they had been the pillars of the concern, and their labours, intelligence, and constant and indefatigable exertions were beyond all praise, and he thought it was due from all present to thank those gentlemen in the strongest way they could.

A discussion ensued as to the means of expediting the production of the work and the mode of properly recognising the services of the hon. secretaries, and a vote of thanks to the chairman closed the proceedings.

"PRESS" DINNER AT THE MANSION HOUSE.

THE members of the "Press" were entertained by the Rt. Hon. the Lord Mayor on the evening of the 24th ult., at the Mansion House, Dawson-street. The dinner (which was served in the "Oak Room") was partaken of by over one hundred gentlemen representing the metropolitan and provincial newspapers, and a few others. The usual loyal, and several complimentary, toasts were proposed and responded to, and the evening *réunion* was enlivened by the singing of songs appropriate to the happy occasion. Mr. Edward Purdon is the first member of the Press ever selected to fill the Civic chair in our ancient city; we are sure its dignity will be fully sustained in his person. As one of the proprietors of the *Irish Farmers' Gazette* (an ably-conducted weekly journal, edited by R. O. Pringle, Esq.), for over a quarter of a century he has had no small share in every movement (more particularly those immediately connected with agriculture) that would have a tendency to benefit our country. We could well afford to have some thousands of such true patriots scattered in every province of Ireland. We shall conclude these remarks by saying that the manner in which his lordship's invitation was responded to by men of every creed and political bias, sufficiently testifies to the high respect accorded to him by all sections of the community.

THE PARIS SEWERS.

AMONG the sights of Paris, which provincials and foreigners, who know how to find such odd show-places, are most anxious to see, are the 'gigantic collecting-sewers beneath the city, constructed at the recommendation and under the auspices of the late Prefect of the Seine. The main artery of these extensive subways on the nothern bank of the river is between three and four miles in length, and extends from the Place de la Concorde to Asnières, near to which well know suburb the principal southern artery, after crossing the Seine in a monster tube close to the Pont d'Alma, will eventually form a junction with it. Besides these principal arteries, which have a height of close upon 15 ft. and a width of about 18 ft., including a pathway on each side nearly 3ft. wide, there are thirty miles of secondary galleries of somewhat smaller dimensions, in addition to an intricate network comprising nearly six hundred miles of sewers proper. The principle purpose served by these extensive subways is the drainage of the streets and the carrying off the refuse water and the rainfall from the houses; cesspools which require to be periodically emptied being still the rule in the French capital.

It is only on certain days in the year that the Paris sewers are made show-places of. On these occasions they are magnificently lighted up with some thousands of moderator lamps, each provided with its silvered reflector. The tickets issued by the municipal authorities indicate the time and place of rendezvous, and precisely at the hour specified the large iron trap-door in the centre of the pavement is raised, and the assembled party proceed to descend some dozen steep steps conducting to the sewers. Overhead is a vaulted roof, intersected in all directions with countless telegraph wires inclosed in gutta-percha tubes, and running along the sides is a large black pipe about a foot and a half in diameter, which supplies the city of Paris with water. Rows of lamps that grow fainter and fainter in the distance, light up the vaulted gallery and cast their reflections in the black, turbid waters at our feet, whereon a large boat, capable of holding some fourteen or sixteen people, is floating. The ladies of the party are handed in and the boat, which is provided with a movable cresent-shaped fan, pierced with holes to admit of the water flowing through, and which, on being let down, fits exactly to the rounded bottom of the sewer and pushes before it all the solid refuse matter that may chance to have accumulated, moves along on its course until a particular point is reached. Here the voyagers disembark and, with their male companions, who have followed them on foot, take their seats in a number of small carriages, likewise provided with fans, and the wheels of which run along rails placed at the edges of the pathways which bound the sewers on each side. Each of these vehicles carries a lighted lamp in front of it, and is provided with a conductor. Signal is given by sound of trumpet of the rails being clear, and off the carriages start, propelled forward by four men running at the sides of them, at the rate of something like six miles an hour. Blue tablets, with white letters indicate from time to time the particular points of the city the party are traversing, and every now and then the cars shoot past some rushing cascade of dirty water tumbling into the sewer with a roaring sound. Occasionally, at a signal from their conductor, passengers must duck their heads as they pass beneath the great transverse iron stanchions which cross and recross the roofs of the galleries. Suddenly a sharp turn is made, and a silver-grey flood of light in front of them is discerned. The cars soon come to a halt and the passengers alight, and in a few minutes find themselves on the quay facing the towers of the Conciergerie.

VELOCIPEDING.—Three young men were summoned before the magistrates at the Southern Police Court on Thursday "for riding on velocipedes on the public footway on the 'Rock-road,' and furiously propelling same to the danger and inconvenience of passengers." They were fined 2s. 6d. each.

THE ROYAL IRISH ACADEMY.

The monthly meeting of this body was held on Monday evening, on which occasion there was a large gathering of the members.

The Rev. Prof. Jellett, in the Chair.

Mr. Eugene A. Conwell read a paper "On a Tumulus and Chamber, in the Island of Gavr Inis, Morbihan, Brittany," and described the conditions of the purchase of the island in 1832, in regard to the treasure supposed to be concealed in this tumulus, and the subsequent clearing out of the interior chamber and gallery, measuring 50 ft. 8 in. in length. The large blocks composing the walls and roof were not of the native rock of the island, but (excepting three which were quartz) were granite, and must have been procured from the adjoining continent. Supposing this monument to have been erected by an essentially primitive people, and at a period subsequent to the time when the present Island of Gavr Inis was a portion of the adjoining continent, what a miracle of mechanical power must have been exerted to drag these immense blocks to the shore, to place them on solid rafts, and, after disembarking them, to haul them to the opposite end of the island, where the tumulus is erected adjoining a cliff. The paper was illustrated by three large sheets giving minute details of the general plan and section of the tumulus, with ground plan, elevation, and measurements of the stones composing the interior chamber, planned and drawn in 1868 by Sir Henry Dryden, Bart. (the present head of that house which two centuries ago gave to the world of letters the poet John Dryden), and Rev. W. C. Lukis, together with twenty-one sheets of drawings of the sculptures on the stones, executed by Sir Henry Dryden. No capstone, and only one pavement stone, was found sculptured. Twenty-two of the upright stones were profusely covered with sculptures, of the intended significance of which, whether idiographic, symbolic, or intended merely for ornamentation, the author could offer no explanation. He said that a little stone turned up near Rosetta, on the western mouth of the Nile, by a French officer of engineers, in the month of August, 1799, had, from its fruitful contents, led to the deciphering and reading of what had become mystic characters on the Pyramids of Egypt; and if we doubted the possibility of such another lucky accident leading to the interpretations of the characters before us, may we not at least hope that by collecting them, and closely analysing and comparing the analogies of the characters, some future antiquary will do for archæology what Whitley Stokes has done for language, and unravel to future generations the mystery which is at present impenetrable to us—viz., the exact import of every line, and curve, and figure on these monuments of past times. Mr. Conwell also exhibited two series of drawings from the cairns on Sliabh-na-Cailligħe—one to show the kindred character of the ancient sculptures of Ireland and Brittany, and the other the sculptures on twenty-eight inscribed stones in a single cairn on Sliabh-na-Cailligħe, exhibiting an elaborate diffuseness and a variety of characters unequalled in any single cairn hitherto opened and described in any part of the world.

A vote of thanks was passed to Sir Henry Dryden for permitting Mr. Conwell to exhibit his plans and drawings.

Mr. Robert S. Ball read a very interesting paper "On the Small Oscillations of a rigid body about a fixed point under the action of any forces, and more particularly when gravity is the only force acting."

This paper was referred to the Council for publication.

Dr. George Sigerson read a paper "On Microscopical Researches on the Atmosphere."

After the reading of this paper a discussion took place as to whether the germ of animalculæ with which the air abounds was productive of, or incentive to, the contagion of disease.

Dr. Stokes was of opinion that it would be rash to maintain that such was the case; he hoped Dr. Sigerson would prosecute his researches on the subject of his paper, which he felt was one of very great interest.

The chairman stated that several books of interest and value had been presented to the Academy, amongst which was the "Select Sonnets of Petrarch, by James, late Earl of Charlemont." This was presented by the present Earl of Charlemont.

OXYGEN GAS AS A NEW MANUFACTURE—ITS USES FOR HEAT AND ILLUMINATION.*

(Continued.)

M.M. Tessié du Motay and Maréchal have established a factory at Pantin, near Paris, where they manufacture oxygen, which they deliver at Paris in circular iron gas-holders, similar to those for the so-called portable coal-gas. They intend also at the same time to prepare pure hydrogen, which they require for their methods of illumination. A great revolution has thus taken place in the scientific history of oxygen in the course of the last few years; for the gas, which used to cost 20 francs the cubic metre, and which was sold at about 35 francs the cubic metre for the occasional scenic lighting of the theatres and for public festive occasions, can readily be now obtained at the works at the average price of 80 centimes the cubic metre, and is delivered for 1 franc 50 or 1 franc 75, according to distance.

Let us now examine some of the industrial causes which have determined this actual and economical manufacture of oxygen; a real manufacture, for although the industry of oxygen may remain for some time in its embryonic state, its production as an article of commerce will form a great event in our scientific annals, and mark an epoch hereafter as regards many branches of manufacture and of metallurgy.

What, then, may be the industrial part that oxygen is destined to play? Not more than ten years ago M. Malaguti, in his excellent *Traité de Chemie*, in the chapter entitled "Applications of Oxygen," wrote as follows: "Oxygen has up to the present time received no applications. . . . . . To obtain oxygen at a reasonable price, and to condense it for the requirements of industry, would be a grand problem worthy of solution. Heat is one of the most important instruments in the hands of the manufacturer. This instrument is the more useful the more energetic the heat: the blowing-engine alone is sufficient evidence of that. That apparatus condenses, however, not alone the oxygen, but with it is also condensed an inert gas, which absorbs uselessly a portion of the heat of combustion." This problem then, so important for chemistry in all its applications, as well as for many arts, has been already solved by science, and it is now the part of industry to turn the solution to profit. We must remark in passing, however, that Malaguti was here scarcely historically correct; we quote from memory only, but believe we are correct in saying that Wedgewood in England and Achard in France both endeavoured to apply oxygen, in place of atmospheric air, to the blast of small blast-furnaces, with, however, little other result than that of melting down their furnaces.

Since the time chemists have studied the properties of oxygen and of hydrogen, they have fixed their attention upon the enormous calorific power of the flame which the mixture of hydrogen and oxygen in the proportion of 1 to 2 produces. Several instruments or blowpipes have been contrived for burning this detonating mixture without danger, but this calorific instrument remained until the present time very little used, and solely by the scientific man. M. H. Deville, at the period of his fine researches on the working of platina, showed of what great importance the gas blowpipe might become to metallurgic industry requiring high temperatures. The oxy-hydrogen flame alone is capable of melting platina in large quantities by the method of MM. H. Deville and Debray. These chemists ask, will it not be simpler in the manufacture of iron, instead of first bringing together laboriously sundry pieces of iron by means of puddling and then of trying to weld them by the coarse process of hammering, continuing the forging for a length of time, to melt the iron together at once? That they imagine would only be possible under the condition that the furnace be supplied with pure oxygen. We might then have, melted wrought-iron, flexible, malleable, possessing great tenacity, and at the same time with almost the softness of the lead. There may be, indeed is, in this a great deal that is chimerical and, as respects manufacturing realities, even incorrect. And there is no doubt much in what follows as to which the same might be said; yet there is a vein of prophecy of future progress when they also tell us that the most refractory minerals might be melted in a few seconds in small furnaces fed with oxygen, instead of in a blast-furnace of 15 metres in height taking in a gas which contains an inert body to the extent of four-fifths of its volume. Might not thus these huge blowing-engines, which waste so great a power in delivering these torrents of air, be omitted with great advantage both for convenience and economy? Why shall this powerful calorific agent not be now utilised in a continual manner in our large laboratories, where all other progress in science has been practically realised? What is simpler and less expensive than to condense the oxygen, prepared by one or other of the methods already described, into a large gas-holder, and to lay it on in the easiest way to different parts of the laboratory where the blowpipes and furnaces, of which simple and convenient model forms exist already, could be established either fixed or movable? What they here say about the "large laboratories" refers equally to our metallurgic and other workshops, where metals, alloys, porcelains, glass, &c., have to be operated upon. A saving of workmen's labour and time will really accrue by suppressing these huge coke-fed furnaces and by using their energetic heat, which can be roused or modulated or extinguished by the action of two cocks. A gas-holder of small volume will easily contain ten cubic metres of oxygen gas, condensed under a pressure of two or three atmospheres.

In all this there is much that is true, but also a good deal that, at present at least, is merely visionary. Heat, indeed, we can thus have, and concentrated to any extent, but the difficulty arises (as yet) how we are to apply it. The most refractory materials of which hitherto we have been able to construct our furnaces won't stand against it. We melt the furnace almost as quickly as whatever may be in it. Lime crucibles, as used by Deville, may do for some purposes and in his hands, but (as yet) are not fitted to the manufactory.

LOSS OF LIFE IN A CHAPEL.

A melancholy occurrence took place on Sunday week in the Roman Catholic Chapel of St. Joseph, Grosvenor-street, Scotland-road, Liverpool, resulting in the death of sixteen persons, and severe injuries to many others. So numerous was the congregation that a supplemental service was held in the school-room underneath the chapel. It appears that an inebriated man found his way in, and shouted to the preacher that he had heard him long enough. A cry of "fire" was raised, and there was a general rush to the doors and windows. The clergy, on hearing what was going on, exerted themselves to the utmost to allay the panic, but alas! a few seconds only was sufficient to reveal a picture of destruction.

In all accidents of this class there is a strange similarity. One word of false alarm arouses a fear which no assurances can allay. The greatest of these calamities in modern times are those which occurred at Glasgow, Limerick, Galway, and New York, and in all these cases, as at Liverpool, at Bristol, at

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* From the *Practical Mechanic's Journal.*

Dundee, at Sheffield, and elsewhere, the sufferers have been children, or persons of very humble rank in life. The calamity at Glasgow in 1849 arose in the gallery of the Dunlop-street Theatre. An alarm of "fire" was raised, the audience received with cheers the assurances of the managers that there was no danger, but a stampede afterwards occurred from the gallery, and sixty-five people were killed. At Limerick, on 29th January, 1850, five hundred women were sleeping in a workhouse loft, when some one maliciously raised a cry of "fire;" there was an immediate rush to a ladder, and twenty-seven were killed, and twenty-eight seriously hurt. The Galway panic happened at an early Christmas mass in 1842, at which nearly 5,000 people were present. A rail snapped, a cry arose that the gallery was falling, the people rushed out, and more than thirty were killed. The New York accident occurred in November, 1851, in a school of 1,800 children. A teacher had been carried out fainting, an attendant cried for water; the cry was thought to indicate that the building was on fire; the children rushed out, a balustrade broke on the crowded staircase, and fifty were killed and more than fifty seriously hurt. In the accident at Manchester, in the summer before last, a very slight cause produced the alarm to which twenty-three persons were sacrificed, and in most other cases the alarm itself was altogether needless and baseless.

SCHOOL OF ART, ROYAL DUBLIN SOCIETY.

The following address, accompanied with a gift, has been presented to Mr. Robert Edwin Lyne, Head Master of the Dublin School of Art:—

Dear Sir,—We, the undersigned pupils of the Dublin School of Art, desire to express our grateful sense of all you have done for our instruction, for the welfare of this school, and the advancement of Art in this country. We feel that it is to your ability, firmness, and unremitting attention, for the last six years, that the success of this school in the National Competition, and the high position which it now holds, is entirely due. We wish also to express our sense of the unvarying kindness and courtesy you have always shown towards us, and of the patience as well as the ability with which you have directed our studies, and enabled us to follow out the various branches of Art to which we have devoted ourselves. We gladly acknowledge the beneficial influence of your example, leading us to diligence and perseverance in our pursuits, and teaching us conscientiously to carry out our work to the utmost of our capabilities. We feel that to this influence, together with the spirit of harmony and goodwill which you have always endeavoured to promote, we are indebted to much of the pleasure, as well as the success, with which we pursue our studies under your guidance. It also gives us much pleasure to bear testimony to the many acknowledgments made by former pupils, and others unconnected with this school, of kindness received from you. We now ask you to accept the accompanying gift, as a small token of the high esteem and regard we feel for you, and rest assured that nothing in future will be a greater source of gratification to us than to hear of your welfare and happiness.

On behalf of the students, (Signed)

L. H. Deering, Jun., Chairman of Com.
G. W. Withers, Treasurer.
J. Lynch, Secretary.

REPLY.

Ladies and Gentlemen,—I find it difficult to express to you how much I feel and appreciate the very kind manner in which you have recognised my efforts in the furtherance of Art education in this city, and in Ireland, during the six years that I have been connected with the Schools of the Royal Dublin society. It has been my constant wish, however imperfect may have been my endeavours, to place Art-study on such a sound and true basis as might lead to results worthy of this the oldest School of Art in the United Kingdom; and I trust that in future the position it now holds may be sustained, and that even greater success may attend our work, for I believe that the growing appreciation of Art education haveing for its aim the sincere rendering of Nature's forms and harmonies, must lead to greater progress year by year. It is most encouraging to find that you are so thoroughly impressed with the importance of persevering application and conscientious study, so necessary in a career in which the number of competitors, increasing each day, demands greater individual merit, in order to comply with the varying conditions of success. The pleasure you have experienced in a pursuit requiring in so high a decree a nice combination of the mental and practical, and so well calculated to develope the higher faculties of the mind and augment intellectual enjoyment, must increase along with a growing power of regulating detail by comprehensive generalization, and the ability to combine in a greater or less degree the lessons of nature with the teachings of the æsthetic productions of all ages and countries—by such study only can you hope in the future to indicate the refinements and perfections of the age, or produce works that may testify in favour of our own time. I gratefully acknowledge the kind feeling and consideration that you have on all occasions displayed towards me, as well as your harmonious co-operation, which has lightened my labours, and tended so much to success. It gives me much pleasure and satisfaction to know of the many acknowledgments in my favour made by former pupils, and others unconnected with the School. In accepting your very handsome gift, I must assure you that it will always afford me the greatest gratification and happiness to know that I possess your sympathies and good wishes. R. Eewin Lyne.

BOOKS RECEIVED.

Atchley's Builders' Price Book for 1870. London: Atchley and Co., Great Russell-street.

A copy of this work has been before us for some time. We are glad to notice a marked improvement in the present issue. Amongst the additional chapters given will be found one on "The Marks and Qualities of Wood," from the pen of Mr. William Richardson, which will prove useful to many in the trade. Mr. Francis Campin, C.E., furnishes a valuable paper "On the Application of Iron to Building Purposes," accompanied with diagrams and workings. We may here repeat a portion of our remarks made whilst reviewing this work on a former occasion, viz.—that "in the absence of a local guide book, there is none other that we can so strongly recommend to contractors and professional gentlemen in this country."

Indian Works and English Engineers: a Letter to his Grace the Duke of Argyll, K.T., &c., Secretary of State for India. By John Bourne, C.E. London: Longmans, Green, and Co.

In this pamphlet the author addresses the Secretary of State for India on the mal-treatment inflicted on the civil engineers by the Department of Public Works in that country. "Though belonging," he says, "to an educated, honourable, and influential profession, these gentlemen have been treated very much as if they were the pariahs of the Indian service." The wholesale and unjustifiable accusation, that civil engineers in India were in the habit of receiving bribes from contractors, has been sought to be explained in a way which has not tended to the satisfactory solution of the question, nor in any manner exculpatory of the authorities.

Mr. Bourne (p. 5) says:—

"Now it is no doubt the case that in England and elsewhere engineers, architects, and other professional men are sometimes paid by a percentage or commission upon the amount of work done—not in addition to salaries, but in lieu of salaries; and if the Government of India had thought it right to notify that the mode of payment by a fixed salary, instead of the mode of payment by commission, was the one which would be adopted in the department of Public Works, the intimation might have been considered very superfluous—seeing that all this had been already settled in the agreements concluded between the Government and the engineers,—yet it would not have been considered offensive. But when it was thought necessary to issue 'a distinct prohibition of the receipt of commission,' who, it may be asked, was supposed to pay that commission? It is plain it could only be paid by the Government or the contractor, for those two parties, in addition to the engineer, are the only ones concerned in the execution of any work. For an engineer to receive a commission from a contractor while also receiving a salary from his employer, would be what is commonly called receiving a bribe; and although it might be superfluous, it could not be wrong for the Government to notify that it distinctly prohibited the acceptance of such gratuities. But if the Government now pretend that the commissions they referred to were only those equitable commissions or percentages which in England are sometimes given in lieu of salaries, their explanation is tantamount to saying that the Government strictly prohibited a mode of payment which no party but the Government itself could possibly make! The commissions referred to are either corrupt or incorrupt. If the latter, then since it is on the Government, as the proprietor of the works, that the payment of the commissions would devolve, the notification to engineers resolves itself into a prohibition to accept a mode of payment which the employing party itself declares it has no intention to offer! If, on the contrary, the commissions referred to are corrupt commissions, or in other words bribes, then the Government had no right to say that civil engineers, whether in England or India, considered such commissions a legitimate source of remuneration. That bribes are what was meant to be at least suggested — though with a loophole for escape if challenged,—and that a damaging stroke was thus intended to be dealt upon civil engineers in India by their military opponents—who can doubt? And will it absolve the propagators of such calumnies to find them now, instead of either proving their charge or frankly confessing they were mistaken, attempting by vague and sophistical phrases to explain away the plain sense of their words, and professing that they really meant something very different, though they thereby land us among absurd superstitions and insoluble dilemmas? So far from being incapable of misrepresentation, they have been caught in the act, and now stand very much in the position of children found with their lips smeared with jam, and who nevertheless deny that they have touched it. It would have been much more dignified either to justify the charge or confess the fault."

In the following words Mr. Bourne testifies to the skill displayed by civil engineers in carrying on the railway works in India:—

"The railway works which have been carried out in India by English engineers, spite of a few failures in the bridges of one particular line, have been executed in a skilful and creditable manner, and have been completed in the course of a few years, while the whole works of the antecedent century, during which military men have been alone employed upon such undertakings, have been few in number, and in general poor both in design and execution—the native idea generally shining through a thin varnish of European art apparently elaborated from books. No one who examines these works can come to any other conclusion than that the instruction has come in an inverted order, the maistry, or native foreman, instructing the local superintendent, and he in turn instructing his European superior; so that the ultimate measure of skill exhibited is that of the native—a system as reasonable as if the general were to be instructed by the private. In the railway works all this was for the first time reversed; and the works ceased to resemble those of a promising country amateur, who had called the village bricklayer and carpenter to his aid in carrying out a work on the pattern of one shown in some cyclopædia. The probity of the civil engineers employed upon the railway works, so far as I have ever heard, has always been unimpeached, and many of them, like Mr. Turnbull, have not only exhibited eminent talents, but great patience and prudence in dealing with a haughty class of officials, often more difficult to manage than the actual work. Of exceptional military men I do not doubt as much could be justly asserted, especially in the case of those who have been trained in the Punjab, where the officials of every kind are, as a general rule, totally unlike those in the other parts of India, being laborious, able, courteous, and anxious to advance the improvement of the country by every means in their power."

This pamphlet is worthy of attentive perusal by all interested in such a very important subject.

As we may not again allude to this subject, we print a letter addressed by the President of the Institution of Civil Engineers to the Governor-General of India, bearing date the 19th ult.:—

"I have the honour to inform your Excellency that Colonel Strachey's letter of the 29th of November, 1869, with 'Circular, No. 84, Public Works,' was laid before the council of the Institution of Civil Engineers at a meeting held yesterday. I have been requested by the council to acknowledge on their behalf the assurance conveyed in Colonel Strachey's letter, 'that nothing had been further from the intention of the Governor-General in Council than to impute unworthy practices to the profession,' and that 'his Excellency in Council most fully accepts the declaration made by the council of the Institution of Civil Engineers of the principles which are recognised by the profession in relation to the payments they receive for their services.'

Charles B. Vignoles."

DEATH'S DOINGS IN 1869.

THE Registrar-General has furnished us with his "Yearly Summary of the Weekly Returns" for 1869. He states that "7,675 deaths were registered in the Dublin Registration District —3,885 males and 3,790 females—being equal to a ratio of 1 in 41, or 24 in every 1,000 of the population. On the north side of the river there were registered 2,988 deaths—1,519 males and 1,469 females—or 1 in 37 of the population; and on the south side 3,569—1,829 males and 1,740 females—affording a ratio of 1 in 41 of the population. In the suburban districts of Rathmines, Donnybrook, Blackrock, and Kingstown, the number of deaths registered amounted to 1,118—537 males and 581 femsles—affording a ratio of 1 in 53 of the population, the ratios being respectively, Rathmines, 1 in 47; Donnybrook (which includes the City of Dublin Hospital and the Hospital for Incurables), 1 in 46; Blackrock, 1 in 49; and Kingstown, 1 in 77. Of the 7,675 deaths in the entire district, 2,323 were registered in the first quarter, 1,816 in the second, 1,673 in the third, and 1,863 in the fourth, the weekly average being 148. The deaths registered in London during the year 1869 amounted to 77,933, affording a ratio of 1 in 41 or 25 in every 1,000 of the inhabitants; in Glasgow to 15,620, equal to 1 in 29 or 34 per 1,000; and in Edinburgh to 5,382, being equal to 1 in 33 or 30 in every 1,000 of the estimated population. The number of deaths from zymotic diseases registered during the year amounted to 1,556, or 1 in every 4·9 of the total deaths. Scarlet fever caused 510 deaths, or 1 in 15 of all the deaths: the number of deaths from scarlet fever registered in the year 1868 was 424. Two hundred and eighty-six deaths were caused by fever—viz., 68 by typhus, 145 by typhoid or enteric, and 73 by simple continued fever. Diarrhœa proved fatal in 248 instances, showing a decrease of 160 as compared with the year preceding. One hundred and fifty-nine deaths were attributed to measles, against 49 in 1868. Only 20 deaths were ascribed to whooping-cough, whereas in the year preceding no less than 250 deaths resulted from this disease. Eighty-nine children died from croup. Diphtheria caused 18 deaths, and quinsy 7. Convulsions was the cause assigned for the deaths of 447 children. Bronchitis caused 1,141 deaths, and pneumonia or imflammation of the lungs 206. Heart disease produced 340 deaths; aneurism 37; and pericarditis or inflammation of the heart's covering, 6. Phthisis or pulmonary consumption caused 957 deaths; a like number of deaths occurred from this disease during the year preceding. One hundred and forty-one deaths were ascribed to mesenteric disease; 153 to hydrocephalus or water on the brain; and 64 to scrofula. Cancer caused 138 deaths. One hundred and ninety-four deaths resulted from violence: of these 164 were accidental, 17 suicidal, 9 homicidal, and 4 were not classed."

LAW.

CONSOLIDATED NISI PRIUS COURT.

(Before Justice Lawson and a Common Jury.)

CLAIM FOR FIVE PER CENT. ON AN ESTIMATE.

John L. Jones v. *W. P. H. Vaughan.*—This was an action brought by Mr. Jones, upholsterer and cabinetmaker, St. Stephen's-green, in this city, against defendant, a gentleman residing at Golden Grove, Co. Tipperary, to recover the sum of £37 19s., being £5 per cent. upon a sum of £759, the amount of an estimate for the furnishing of two drawing rooms at defendant's residence. It appeared that in the month of January, 1869, Mr. Vaughan sent plans of his drawing rooms to plaintiff and also to other houses, and inquired of them whether they would send him estimates for the furnishing of these rooms on a handsome scale. All the firms complied with the request and furnished estimates, the amounts being different in each case, and ultimately Mr. Vaughan gave his order to Messrs. Beakey, Stafford-street, whose estimate was for £437. When plaintiff discovered that he had not received the order, he wrote for payment of the £37 19s., and this defendant declined to pay on the ground that the supplying of such an estimate was voluntary on plaintiff's part, who did it in order to take his chance of getting the order for the furniture. None of the other houses who had supplied estimates made any charge, and evidence was given that it was not usual to do so in the trade. The plaintiff's case was that this was a special estimate for very superior furniture, and that he spent the best part of eight days and one night in preparing designs and making the necessary calculations!! The jury found a verdict for defendant. Counsel for plaintiff, Messrs. Purcell, Q.C. and Gibson. For defendant—Messrs. J. Clarke, Q.C; Exham, Q.C., and Roper.

HARBOURS.

It is expected that the dispute between the Drogheda Harbour Commissioners and the Messrs. Grendon, proprietors of the Dock Yard, will be amicably settled without any recourse to law or its tedious processes. By the terms of the lease held by Grendon and Co. it appears they are not claiming more of the foreshore than they are legally entitled to.

The first instalment of loan for the purpose of making Wicklow Harbour suitable for a larger class of vessels, has been paid over to the credit of the Harbour Commissioners. The necessary works will be at once proceeded with.

NOTES OF WORKS.

New and extensive farm offices are to be commenced soon at Crebilly, Ballymena, for General Wardlaw, from the designs of Mr. T. Hevey, architect, of Belfast.

A new warehouse is about to be erected in Donegall-place, Belfast, for Messrs. Day and Bottomley, on the site heretofore occupied by W. Ogle, wine merchant, &c., on the ground floor, and on the first floor by Mr. Jackson's offices. Messrs. Thomas Jackson and Son, architects.

WORTHY OF IMITATION.

[COMMUNICATED.]

ON Thursday evening, the 6th ult., the tenants on Clongheraillу More, &c., the estate of the Rev. C. Alderson, of Kirkheaton Rectory, Huddersfield, were entertained at a dinner at the Queen's Arms Hotel, Templemore. After the cloth was removed, and the usual loyal toasts given, Mr. James O'Connell, vice-chairman, rose and proposed the health of the Rev. Mr. Alderson, and in the course of his remarks paid a graceful and well-merited tribute to his character as a landlord. Mr. Joseph Maguire, architect, of Dublin (who has lately been appointed agent to the estate), responded in an able and eloquent speech, and read a letter which he had received from the Rev. Mr. Alderson, as follows:—"Accept my best thanks for your letter, and I am glad you have fixed the day for receiving the rents; I beg you will convey to them my best wishes for their welfare during the year upon which we have just entered. Mutual kindly feeling between landlord and tenant, ought, I think, always be encouraged, and this kindly feeling it has always been my wish to promote, and trust I shall ever be desirous of furthering every object, which seems likely to contribute to our mutual benefit. We ought to regard ourselves as horses, pulling in the same team, and endeavour always to draw in the same direction, and each strive to aid each other, and by mutual efforts much may be accomplished which will be beneficial to both. If leases be wished for on fair terms, as I said to some of the tenants two years ago, I shall be most willing to give them." Mr. Maguire concluded by proposing the health of the tenantry, which, was responded to in suitable terms by Mr. E. Davy. Mr. Cormack then gave the health of Mr. Maguire, who expressed the pleasure he felt in meeting them for the first time, hoping he would meet them again at a similar reunion next July. Several songs were sung, after which the company separated after spending a most agreeable evening.

MISCELLANEOUS.

The strike at the great ironworks of Creuzot, employing on the whole about 10,000 hands, and of which M. Schneider, President of the Corps Législatif, is director-in-chief and a large proprietor, has been brought to a close without any serious results, although these seem to have been anticipated by the Government having dispatched a large military force to the spot, including two regiments of the Line, four squadrons of lancers, and a number of gendarmes, in all upwards of 3000 men. The strike seems to have originated on some proposition made by the manager with reference to the sick and benefit fund, which was considered at three meetings, all more or less tumultuous, of the hands employed, but led to no result. A fitter in the machine department, named Assy, who had taken an active part againt the management of the works, and had temporarily absented himself from his duties, was discharged in consequence, and eventually induced the hands to strike. He was, it appears, in relation with trade societies in Paris and London, and was speedily supplied with funds. Moreover, one of the writers in the *Marseillaise* hastened to the scene of strife and encouraged the workmen in their resistance. The presence of the military, however, with the remembrance of what had lately occurred at Aubin, when a number of workmen on strike fell under the chassepots of the troops, overawed the disaffected; and work was eventually resumed, after a few arrests had been made.

A TELEGRAPH SHIP IN THE ENGLISH CHANNEL.—The Lords of the Admiralty have just issued a notice to the effect that on or about the 1st day of April, 1870, a telegraph station vessel will be moored by the International Mid-Channel Telegraph Company off the entrance to the English Channel. From the telegraph vessel—Bishop Light vessel will bear N. by E., distant 33 miles; Land's End N.E. ½ E., 49 miles; Lizard E. by N. ½ N., 56 miles; Ushant lighthouse S. by E. ¾ E., 70 miles. The vessel will be painted black, with the words "Telegraph Ship" in white letters on her sides; she will have three masts, and to the top of the mainmast a large black cone will be hoisted during daytime, and a powerful globular light at night, elevated 30 feet above the sea, which in clear weather should be seen from a distance of six miles. A flare-up light will also be shown every 15 minutes during the night from an hour after sunset to an hour before sunrise. The commercial code of signals for the use of all nations will be used on board, to the exclusion of all other codes, and none other can be noticed.

The postage upon letters to the United States and the Dominion of Canada is reduced from sixpence to threepence the half-ounce. To Australia, the charge is by the half-ounce; formerly every fraction above the ounce was charged as an ounce. To Greece the half-ounce scale is applied instead of the quarter ounce as formerly. To Italy, *viâ* Belgium, the rate is reduced from 11d. to 8d. To Bolivia and Peru, from 2s. to 1s. 6d.

A London contemporary informs its readers (on what authority we know not) that "The Albert Memorial at Dublin was completed on Friday by the placing of a statue of the late Prince Consort on a pedestal forty feet from the ground. The figure is of stone, ten feet and a half in height, and the Prince is clothed in the robes of the Order of the Garter"!! The flagstaff in "Leinster Lawn" still marks the site selected for the "Memorial" some years ago. Where is the statue?

TENDERS.

For completing the Female Probationary Ward, Cork Union Workhouse; Mr. Richard R. Brash, architect:—

Robert Walker	£1300
Terence O'Flynn	1192
Clifton and Co.	1150
Drummy and Dalton	1102
Barry M'Mullen .. (accepted)	1078

MODERN INVENTIONS.—That great invention the "Chronograph," which times all the principal events of the day, and has revolutionized and superseded the clumsy old-fashioned "Stop-watch," seem likely to be eclipsed in fame by that still greater and more useful invention the "Keyless Watch." The fact of no key being required renders these Watches indispensable to the traveller, the nervous, and invalids. The enormous number sent even by post to all parts of the world, is a convincing proof of their great utility. The prices at which they are sold range from 5 to 100 guineas. Thousands of them are manufactured by Mr. J. W. BENSON, of Old Bond street, and of the Steam Factory, Ludgate-hill, London, who sends post free for 2d. a most interesting historical pamphlet upon watch making.

The Proprietor of the IRISH BUILDER *requests that all parties who have been furnished with accounts from the office will send the amounts of same immediately. P. O. Orders should be made payable to* Mr. PETER ROE.

All Communications respecting the IRISH BUILDER, *should be addressed to* MR. PETER ROE, 42, *Mabbot-street, to whom all payments for Subscriptions and Advertisements must be made.*

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The Irish Builder.

Vol. XI.—No. 244

School of Art, Royal Dublin Society.

PRIZES awarded to the successful competitors in the School of Art were on Friday distributed by the Lord Lieutenant, in the Lecture Theatre of the Royal Dublin Society. It is satisfactory to learn that the efforts of the committee to extend Art education, particularly amongst the artizan classes, has been attended with marked success during the past year. Much of this success is, no doubt, owing to the zeal and ability of the head master of the school, Mr. Edwin Lyne.

The position held by this school will be best understood when contrasted with the principal art schools of the three kingdoms. South Kensington may be put out of the field of competition, for it is absurd to compare the opportunities in provincial towns with those of the South Kensington University, with its lectures and collections. Last year South Kensington obtained one of the two Blue Ribbons of art education in the Princess of Wales' Scholarship. The other fell to Dublin, to Miss Frances Jordan, for original designs for muslins. She also obtained a gold medal. The year before, Miss Brett of the Dublin School carried off one scholarship, and Kensington the second. It is remarkable that Manchester, Liverpool, Birmingham, and Leeds did not carry off a single gold or silver medal. Glasgow had one gold and no silver. Liverpool neither gold, silver, nor bronze. Though Edinburgh obtained more Queen's prizes, Dublin surpassed Edinburgh in gold and silver medals, and all others, except Kensington, in the Princess of Wales' Scholarship. The report states that designs for manufactures is the study of a large number of students, who had produced some of the highest order of merit, not to be surpassed by the products of any school of art in Europe. They were chiefly for wall decoration, tabinets, muslins, and pottery. Prizes had been offered by Messrs. Sheridan, of Parliament-street, Messrs. Walpole, Suffolk-street, and Messrs. Fry, Westmoreland-street, which had greatly tended to improve this branch of art education. In pottery, specimens of the most exquisite workmanship had been produced at Belleek, vastly enhanced by the beauty and taste of the designs.

The report was read by Colonel Adamson, one of the Fine Arts Committee of the Society. We print some portions of it :—

It may not be out of place here to refer to the opinion, expressed by a great Art authority, as to the Dublin Schools, before the late Royal Commission on Art and Science in Ireland :—"The Dublin School is managed just on the same principles as in the other kindred schools throughout the United Kingdom. The position it has taken is shown by the number of prizes it has obtained, and the amount of money that is paid to it for results. My impression is, that never in the history of schools of art has the Dublin school been more prosperous, or so prosperous as it is now ; and that I attribute to its being administered on sound principles, and to its having the luck of an excellent master : and I don't hesitate to say as a positive fact, that the Dublin School of Art is a great deal better than the Ecole de Dessin in Paris."

During the year a choice set of casts has been added to the collection of the school. They are chiefly specimens of the antique period, from the British Museum.

As regards the studies that have been pursued in the school during the past-year, we may remark that modelling in clay of the human figure has been cultivated with great success. Painting from the living model and still life, and drawing from the antique in chalk, have also been much practised—studies invaluable as leading to exactness, and affording a complete power of execution.

Designing for manufacturers has been steadily pursued by a considerable number of students ; and many very beautiful designs of the highest order of merit have been produced, for wall decoration, tabinets, muslins, and pottery.

The attendance of students during the year has been 538—279 males and 259 females.

The attendance of the artizan classes has been 356 —259 males and 97 females.

The total receipts in fees amounted to £510 9s. 6d.

The local examination of the school took place on the 9th, 10th, and 11th days of March, in the evening, when 169 students presented themselves, 105 of whom—64 males and 41 females—succeeded in passing examinations in 151 papers, consisting of 52 freehand, 40 practical geometry, 24 perspective, 32 model drawing, and 3 projection. One hour was allowed for each paper.

The following students deserve particular mention as having passed at this examination in the four subjects required for the full certificate, viz., Emily B. Hamilton, Mary Ann M'Gee, and Park B. Dobson.

To the schools of South Kensington and Dublin, the two Princess of Wales' Scholarships have been again this year awarded.

Report of the Judges of the Works executed in Competition for the Society's Prizes :—

Your committee, in making their examination of the works submitted in competition by the students of the School of Art, have, on this occasion, to report most favourably as to the improvement made in many of the sections, and more particularly in Class III. which refers to art as connected with manufactures. Among these the designs for porcelain, muslins, and wall decoration, evince a decree of correct taste in form, composition, and colour, highly creditable to the students.

In recording this satisfactory progress, we have to express our regret that we have been unable to take into consideration several works by the assistant art teachers, they being exhibited in an unfinished state. Ample notice of the time of the intended adjudication having been given, there appears no reason why these works should not have been completed, so as to enable us to record their respective merits.

Earl Spencer, in response to a vote of thanks for his kindness in presiding for a second time at such an interesting proceeding, addressed the assemblage in a lengthened speech, and concluded as follows :—

"I thank you sincerely for the kind way in which you have listened to my few remarks. I know that this society has a noble work in hands—that no nobler work can any body of gentleman have in hands than that of raising the art feeling in the country. The love of art and the knowledge of art not only gives individual pleasure to those who possess it, but they are thereby able to comprehend and understand the beauties of nature in a way which they never could before. The love of art and the knowledge of art greatly increase the civilization and aspirations of nations, and I cannot imagine a nobler task than that of encouraging it in Ireland."

THE ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND.

THE archæological drawings and notes of Gabriel Beranger, referring to ancient buildings in Ireland (and in Dublin more especially) as existing 1750-60, will be exhibited at the meeting of this institute on Thursday evening ; an important communication relative thereto will be read by Sir William R. Wilde, M.R.I.A. As this will be the only occasion on which this remarkable series of original drawings can be exhibited, it would be advisable for those interested in Irish archæology to be present.

INSTITUTION OF CIVIL ENGINEERS OF IRELAND.

A MEETING of this institution took place on Wednesday evening, in the Museum Buildings, Trinity College :

Mr. JOHN BALL GREENE, Commissioner of Valuation, presided.

The chairman delivered the annual address, and in the course of his observations alluded to the kind assistance he had experienced during his term of presidency from the officers and members of the institution, which latter he described as maintaining the reputation it had sustained for the last thirty-four years. He then referred to the various papers and scientific matters brought before the institution during the year.

THE ROYAL GEOLOGICAL SOCIETY OF IRELAND.

A GENERAL meeting of the society was held on Wednesday evening, in the Museum Building, Trinity College.

GEORGE DIXON, Esq., in the chair.

The Rev. Professor Haughton, M.D., read a paper "On the Mineral Constituents of the Granites of Scotland."

Mr. J. E. Reynolds, M.D., read a paper "On a New Mode of Exhibiting Minerals by the Lime-light."

Dr. Macalister, secretary, read the annual report, which stated that the council was happy to be able to report that the affairs of the society were in as satisfactory a condition as at the commencement of their term of office. In a financial point of view, the society was even more prosperous than it had been for the last few years. The council referred with regret to the deaths of Professor J. B. Jukes, John Good, and C. P. Croker. The council conferred a worthy eulogy on the first-named gentleman, who had taken so important a part in the society's work. The report also alluded to the papers which had been read during the session, and to the joint meetings of this and the Royal Zoological Societies which had been so successfully held during the year.

The following were appointed officers of the society for the ensuing year :—President —The Earl of Enniskillen. Vice-Presidents —R. Callwell, Esq. ; J. Barker, Esq., M.D. ; Colonel Meadows Taylor, M.R.I.A. ; J. E. Reynolds, Esq. ; Sir Robert Kane, F.R.S. Treasurers—Wm. Andrews, Esq. ; Samuel Downing, LL.D. Secretaries—Rev. Samuel Haughton, M.D., F.R.S. ; Alexander Macalister, Esq. Council—Gilbert Sanders, Esq. ; Alphonse Gages, M.R.I.A. ; B. B. Stoney, C.E. ; W. Frazer, M.R.I.A. ; Joseph O'Kelly, Esq. ; George Dixon, Esq. ; Rev. H. Lloyd, Provost T.C.D. ; Alexander Carte, M.D., F.L.S. ; W. H. S. Westropp, M.R.I.A. ; C. R. C. Tichborne, Esq. ; Sir R. Griffith, Bart., LL.D. ; Rev. Maxwell Close, M.A. ; Francis M. Jennings, F.C.S. ; Ramsay H. Traquair, M.D. ; and Robert S. Reeves, M.A.

THE MUNICIPAL CALENDAR, 1870.

A NEAT and compendious handy-book, compiled by Mr. William J. Henry, Town Clerk, has been issued for the use of the members and officers of the Corporation of the City of Dublin. It gives the names and addresses of the aldermen and councillors ; the names of members forming the several committees, their functions, and the days and hours appointed for the despatch of business during the year. Two pages in this little *brochure* are devoted to a "Schedule of Paintings in the possession of the Corporation," the first of which is that of Sir Daniel Bellingham, Lord Mayor, 1665. Another two pages (63, 64) comprise a "Schedule of Royal Charters granted to the Corporation, and now in their possession." The first is one granted by Henry II., in 1171 ; the last recorded is George II., 1727. To the citizens of "*Baliyath-cliath*" this little volume will indeed prove a *vade-mecum*. The printer is Mr. Joseph Dollard, Dame-street.

PROCEEDINGS OF BELFAST TOWN COUNCIL.

The monthly meeting of above body was held on the 1st instant, when the reports of the various committees were brought up and passed. The Town Improvement Committee reported that they had elected Councillor Gaffikin as their chairman for the present year. That gentleman, in moving the adoption of their report, thanked the committee, and hoped that his judgment might be guided by his desire to do justice. The committee had made up their minds not to be idle, for they found there was a great deal to do. If the council gave the means, he would give them a programme of what he proposed should be done in the twelve months, and he hoped they would get it carried out. With regard to the £100 mentioned in the report for four lamps for the corners of the railings of the Albert Memorial, this might be thought a large sum, but they thought they should have ornamental lamps in front, in keeping with the style of architecture. He thought the former chairman of their committee was Chairman of the Albert Memorial Committee, and during the three years of his mayoralty he had spent large sums of money on the Memorial; he had given his year's salary as Mayor to that object, and he could not help saying that, while it was a monument to Prince Albert, it was a monument to the loyalty and liberality of Mr. Lytle. The monument would soon be the property of the Corporation and the town. A sum of £400 was wanted to pay off the last of the expense of this grand work, and he would just ask that the members of the Corporation should bear this amount. The lamps would be for the protection of the Memorial and the service of the public, and it was right that their cost should be defrayed out of the rates. He called attention to the recent deplorable accounts in Liverpool and Bristol caused by crushing out of crowded assemblies of people, and said that the Improvement Committee intended to take up the subject, and, so far as in them lay, have proper ingress and egress to and from every public building in the town. Their theatre was a disgrace; and, supposing an alarm took place in the gallery, if it was crowded, he did not know what would be the result.

Mr. Crawford said this Memorial had already cost £2,000 or £3,000 of the money of the town, and it would take £50 or £60 a-year to illuminate the clock and keep up these lamps.

Mr. Black, in reply to Mr. Crawford, said that the town had paid for no portion of the Albert Memorial, except the clock.

Mr. Lee—Just £700 for the clock and the railings to protect the Memorial, and the lights contemplated are also absolutely necessary as a protection.

Mr. Crawford said they had paid £700 for the clock and £700 for diverting the sewer, and the £1,000 of the town money Mr. Lytle got as salary.

Mr. Boag—The Memorial Committee paid a portion of the cost for diverting the sewer.

Mr. Mullen could not agree with Mr. Crawford in the view he had taken with regard to some public expenditure in connection with the Albert Memorial. It was a wise and judicious thought on the part of the Corporation to put up a public clock, and he approved of proper lamps being placed around the base as a means of protection for this splendid tower.

Mr. Suffern said it was gratifying to know that the tower was not erected by taxes wrung from the people of Belfast, but by the voluntary offerings of the inhabitants, and it was as little as they could do to provide railings and lamps for what was now the property of the inhabitants.

Mr. J. A. Henderson said—Everyone anxious for the advancement of this rapidly increasing town must be gratified to hear of the improvements which the Chairman of the Town Improvement Committee has told us are in view. There is nothing more necessary in a town like this—which is comparatively a modern one—than that those who have charge of its improvements should see them properly carried out. I need hardly say I refer to necessary improvements; and I think all the members of this Corporation will agree with me when I say that every work suggested by the Chairman of the Improvement Committee ought certainly to be carried out. We should not be afraid of the expense that may attend the operations if they are really wanting for the improvement of the town. It is somewhat singular that the chairman should have expressed himself in almost the very words that I intended; for before he said anything on the subject, I had written out a resolution on one of the matters to which he alluded. It was—"That the Town Improvement Committee be requested to take into their consideration the necessity of having some general system adopted with regard to the ingress and egress to all public buildings and places of amusement within the borough, and report to the council." All who have read the accounts of those dreadful accidents that have lately taken place in England, will agree that something should be done here to prevent the possibility of like occurrences. There is one most important requisite in connection with the entrances to public buildings which does not appear to be attended to in Belfast, and that is, the doors should open outwards instead of inwards. I understand that in some countries the necessity of this is so far recognized that it is made imperative by law; but I do not believe that at present we have any such power. The subject is one that should certainly engage the consideration of the committee, and inquiry should be made on the subject. With regard to the Queen's Bridge, I am glad to know that there is a prospect of having it paved with square sets. In the end that will be found to be the cheapest plan of keeping up the roadway there. But there is another very desirable improvement that should be carried out in connection with that bridge. It requires to be widened. Those who are in the habit of travelling over it know the danger that very often attends driving or walking on it. One of the present footpaths ought to be thrown into the roadway, so as to give the additional space to carriages and carts, while a new and wide footpath should be erected outside the wall of the present bridge. This would entail a considerable expense, but the sooner it is carried out the better for the convenience of the public and the credit of the town. With regard to that splendid memorial which has been so deservedly erected to the memory of the good Prince Albert, I need not add anything to what has been already so well said, further than that I quite agree with my friend Alderman Mullan that, while I would like to see the lamps erected around it, I do not think they should be placed outside, as I understand they are in the plan, lest the public traffic would be interfered with. I think they should be at the four corners of the present railing. There is another matter to which I wish to call attention. I think the Town Council and the committee should see about getting the large and important streets paved with square sets. If this was done, it would do away with a great deal of the complaints that have been made about the excessive traffic in some of the narrow streets. It is too well known the carters, when coming from the quays and elsewhere, invariably select the streets that are paved with square sets. The sooner the council commences to carry out the system of paving with square sets in the great public avenues of the town, the better will it be for the comfort and convenience of the inhabitants. There is another matter, and one that will require the most anxious consideration of this Corporation, to which I will briefly refer—that is, the important question of the sewage of the town. The longer this matter is delayed the worse it will be. One gentleman has told us about the difficulty experienced at Oxford in reference to their sewage; and I think if we allow this matter to lie over much longer, the inhabitants in some districts will not only continue to suffer from flooding of their houses, but we shall find a greater difficulty in carrying out a proper system of sewage. We should not be afraid of entering upon necessary and valuable improvements, which may be gained now at a comparatively small cost, while delay will only increase the expense, and the annoyance will be continued. Let us only enter into what is actually required for the proper development of our town, and the sooner we do so the better will it be for the interests of those we represent at this board.

Mr. Gaffikin, as mover, having replied to some of the remarks which had been made, the motion for the adoption of the report was put and passed unanimously.

The report of the Sanitary Committee stated that the number of deaths registered in the Municipal Borough for the year 1869 was 4,560, and gave the following comparative return for ten years:—

1860	2,257	1865	3.484
1861	2,005	1866	3,620
1862	2,139	1867	3,549
1863	2.559	1868	3,861
1864	3,242	1869	4,560

The Mayor said it would be seen that the mortality of Belfast had greatly increased, in consequence of the prevalence of scarlatina, since the month of August last; and, if the population of Belfast was only 160,000, as some believed, the death-rate of the year no doubt would be heavy. In the year 1861, the population of Belfast, according to the census, was 120,777, living in 18,375 houses, being 6·57 to each house. In 1869, the number of houses was 29,383, which, at the rate of 6·57 to each house, would give a population of 193,046; but taking the 11,008 houses built since 1861 as having a population of 5½ to each house, which he thought would be nearer the mark, would give an increase of inhabitants of 60,554, or a total population of 181,321; and the death-rate of the town would, therefore, be about 25, which was over last year, and which he had not expected. Still it was below Glasgow and Edinburgh, which were 34 and 30. The mortality in Glasgow was enormous, being 34; Edinburgh, 30; London, 25; Dublin, 24. In Belfast, as he had said, they did not stand so well as last year, in consequence of the prevalence of scarlatina and other causes—for instance, the rapid inhabiting of newly-built houses, which tended to deteriorate the public health. On the whole, although the mortality was high, it was, he thought, satisfactory, compared with some other large towns. Let them exert themselves, and do their best to improve the general health of the people, as there was no such wealth to a community as the preservation of the health and the lives of the inhabitants.

IN THE DEPTHS.

The St. Louis *Democrat* contains the following description of how Colonel Eads is sinking the great iron caissons for the piers to the bridge across the Mississippi at that city:—

Two immense piers are to be constructed in the river, of solid stone masonry. These piers, to be substantial, must rest on the solid rock that lies, fifty, sixty, or a hundred feet under the sand, under the water of the rushing river. The question was, how to get down all these feet through water and sand, to find the rock to lay the solid foundation. One way would have been to build coffer-dams, and pump out the water, and dig out the sand, and lay the piers in the empty space. But this was impracticable, if not impossible, and Mr. Eads's science and wisdom selected a plan, which, though not original with him, has been greatly improved on by him, and applied more sensibly and effectively than it was ever done before. This plan was to build within a caisson, and above the water, and sink as fast as built, till the rock was reached, and the pier completed. To make this comprehensible to every child, it shall be illustrated very simply.

Did you ever hold a goblet bottom side up, and press it down into a vessel of water? If you have, you know the water does not enter into the empty tumbler, but that the air in it keeps the water out, and as you sink it and press it down, it drives the water up the sides of the vessel. Now suppose instead of the goblet you hold an inverted metallic vessel in the same way; the same facts would be true as long as the air is in the inside of it. If the bottom of this inverted vessel were flat, you could put a brick on it, and another, until you have weighed enough to sink it to the bottom of the water, when you have a pier of bricks. Now, this is exactly what Colonel Eads has done in building the eastern pier of the bridge. But his inverted "pan" is of the size he wishes the bottom of the pier to be, and is forty, fifty, or sixty feet across, as the case may be. Of course, this immense "iron dish," bottom side up, was held in position on the water by machinery. He then laid solid courses of stone masonry on the "dish," or "caisson," and as he built, the weight pressed it down into the river, and now it has reached the bottom of the river, and even sunk 6 ft. into the sand, and the pier is 40 or 50 ft. high. But it has yet to sink 50 or 60 feet farther to meet the solid rock, and the sand cannot be displaced as the water was, but must be removed by artificial means; and this is what is being successfully done now. Of course, as the sand is dug away from under the sides of the caissons, it will sink just as fast. To dig this away, men must get into the "upturned dish," or "caisson," or "air-chamber," under the pier, and work there. We will explain how this is done.

Every one will understand that the air in the chamber must be very much condensed, and that a most essential requisite is that it must be kept so, and not allowed to escape. If a direct opening were made to it anywhere, the escape of the air would cause the water and sand to wash in from underneath, the vacuum would be instantly filled, and there would be the end of sinking the caisson and the pier. Colonel Eads has arranged a very simple and perfect way of entering this chamber, which is now 6 or 8 feet lower than the bottom of the river, and yesterday we went down into it and saw the men at work. In the centre of the pier he has left a circular well, nicely finished with brick sides, and 6 or 8 ft. across. This well reaches to the very bottom, is now 50 ft. deep, and has a flight of steps built circling, next the wall, from top to bottom. Down these steps we went together to the bottom of the well. There we found a door of an oval shape, and about 2 ft. in diameter.

Looking in, we saw a room about 6 ft. high, deep and wide—a sort of cold and damp "oven." "Crawl in," said Col. Eads, "and I'll follow." In we went through the oval hole, knocking off a hat and slightly bumping a head. Col. Eads came also, with a pine stick and a lighted candle on the end of it, or we should have been in Egyptian darkness. The Colonel closed the little iron door, by which we had entered, and it shut us in air-tight. He then pointed to another similar door right opposite, and said, "That opens directly into the air-chamber under the whole pier. I will let the compressed air in here gradually, and when the equilibrium is established, that door will open of itself, and we will go in through it." So saying, he turned the faucet of a brass stop-cock, the air from the air-chamber came singing through it like steam from a boiler valve, and strange sensations crept over us. What if something should burst down there! What power could open the door behind us, now being held by the giant pressure of compressed air. Suppose fainting came over one, and this roaring, singing, thundering in the ears should last for life! But in just one minute and a half the rush of air ceased, the other door opened, the ears were all right, and with no unpleasant sensation we were in the condensed atmosphere; and, crawling through the door, stepped upon the sand into the air chamber. Ten or a dozen men were hard at work, each with a candle, the huge caisson was all around us, glistening with water-drops and iron rust in solution, and the flat iron roof was overhead, with all its tons of stone and pier above us. The sand was damp but not wet, as the compressed atmosphere drove all the water out through the sand, and up through the water, which we had observed before we came down to be bubbling all around the pier, like champagne in a glass.

We walked all about the air-chamber from end to end, and side to side, and saw how the sand is removed, and how air is supplied for the inmates to live on. Powerful air-pumps, worked by steam on boats upon the surface of the river, force fresh air down tubes that are run through the stone-work of the pier, and they keep pure the atmosphere. No less than seven powerful sand-pumps are also seen with their feet projecting down to the bottom, and lifting it up through the pipes and throwing it out above into the river. Three of these pumps will take the sand away as fast as the workmen above can lay the stone-work on the pier, and in four hours the pump we saw at work took out 54 cubic feet in eleven minutes, or 100 cart-loads in four hours. But how can a pump throw out sand? some one asks. Just as silly as were we before we saw it! A temporary well, or box, is put under the foot of a pump, and a large hose brings down water from a force-pump above. The hose opens in the box, the water is sucked up the sand-pump, and two or three men shovel sand into the box to mingle with the water, and be thrown out with it—and that is how the sand-pumps work! Their success has been fully tested—the work is going on satisfactorily—and, if good luck happens, Col. Eads will find his great pier resting on the solid rock within thirty days from now.

THE LIVERPOOL CHAPEL ACCIDENT.*

The recent melancholy accident at a Roman Catholic chapel in Liverpool, in which seventeen persons lost their lives through being crushed among a panic-stricken crowd fighting for escape at the door, is one more proof of the importance,—say rather, the absolute necessity,—of providing adequate means of egress from all buildings intended to accommodate a large concourse of persons; and this, not only with regard to the mere width of the doorways, but with regard also to their situation with reference to each other and to the building, and the means of approach to them from within. Looking at the spot on which the accident happened, it is difficult to say how it could have been better contrived to produce the fatal result which it did, given the circumstance of a panic taking place among those present. At the north-west corner of the chapel a wooden framed partition shuts off a flight of eight steps, between 5 ft. and 6 ft. wide, leading down (at right angles to the length of the building) to a narrow landing. The door at the top of the steps is about 5 ft. wide, the street-door at the bottom only about 4 ft.—a palpable mistake, as the difference in width, if any, should be the other way. On the left of the landing (coming out of the chapel), close to the street-door, opens another door, 2 ft. 10 in. wide, admitting the occupiers of the school-room from below on to a landing, already rather small, if it were for the use of the chapel only, to pass out through the same street-door as is provided for those coming down from the chapel. The result of a panic will be at once perceived: a crowd would be precipitated through the wide door at the top of the steps down on to the landing, there to find a second column fighting its way up through the door on the left of the landing. There are other doors from the chapel, but these open into a passage at the east end, involving a turn at a right angle to get to the street-door at the end of the passage, and the door at the west end was probably that most used by the congregation, and to which the majority of them would naturally turn. This inner door at the top of the steps, before referred to, is a single wide door, opening back against the wall inwards, which is a bad principle for a door in such a position; for if a crowd got up to such a door from within whilst it was still closed, it would be almost impossible to open it at all. With regard to the recent accident, it would have been better could it not have been opened, as the crowd would then have been divided; but, as a rule, all internal doors in such a position should be hung folding, and to open either way.

How to deal with the outer door is a more difficult question; but it appears to us that sliding doors might be much more largely used than they are. They would look better, and be more out of the way on ordinary occasions than a heavy hinged door, and in case of a sudden rush outwards there would be no danger of the passage being blocked by pressure against the door.

The moral which this accident teaches, with regard to provision of exit from buildings, however, is two-fold—1st, never to turn two streams of people through one door, but to provide always separate means of exit from galleries above or from a room below: and 2nd, not to rely on extra doors to be used only in case of a sudden rush. A congregation in a panic means a congregation of people who have temporarily lost their head, their judgment, and their recollection: they will infallibly make for the most usual exit to which habit has accustomed them, and therefore the care of the architect must be to provide that the usual means of exit shall be sufficient for exceptional cases, and that doors shall be easily reached without going through a tortuous and angular course to get at them; and, moreover, that always the series of doors to be traversed should widen as the street is approached, so that the crowd may not be sent in numbers through a wide inner door to find themselves blocked by a narrow external one.

Coming away from our visit to the scene of the accident, we observed in the neighbourhood another building advancing towards completion, St. Stephen's Church and Schools, which also consists of a church over and school-room below; and here again the steps from the church are brought down into the same porch which gives egress from the school-room, landing close to the door of the latter. The doors are wider and better placed than in the chapel in Grosvenor-street, but if the school-room and church should ever be used at the same time, a repetition of the Grosvenor-street calamity, not perhaps in so aggravated a form, might still be possible; not to speak of the every-day inconvenience attendant on such a plan.

In speaking on the subject of panics, it is impossible to avoid a comment on the insane folly and absurdity (to give it no worse a name) of persons who make it their business to raise the cry of "Fire!" in a building at every small disturbance, even such as the unexpected flare-up of a gas-jet. It has not been discovered with whom in this case the fatal cry originated; we more than suspect that, if not in this, at all events in some similar cases, it has been raised from mere wantonness, and in a spirit of mischief,—a proceeding which amounts to criminality; and even if otherwise, the practice exhibits a degree of folly which, for the sake of the public, ought to be treated as if it were criminal. If it were understood that a summary application of Lynch law would be visited at once on the head of every man calling out "Fire!" in the midst of a crowded assembly, we should be saved a good many of such disastrous occurrences as that on which we have been commenting. In the meantime let sensible people remember that when a panic occurs in a crowded building, from whatever cause, in nineteen cases out of twenty the safest thing they can do is to sit perfectly still.

It is said to be in contemplation for the mail train, which once a week will run between Calcutta and Bombay when the line is completed, to have carriages built on the Yankee system—carrying refreshment-room, baths, sleeping accommodation, screws to prevent rattling of windows—and all kinds of comforts; that it will be, in fact, a kind of travelling hotel. In addition to all this, it is said that the fare will be greatly reduced.

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* From the *Builder*.

VILLA, SYDENHAM, BELFAST.

THE villa of which a lithographed illustration is presented with this number, is about to be erected for James Cunig, Esq. It will stand on a lot of about twenty acres. The site is a first-rate one, and affords splendid views from all sides. Ample accommodation for a gentleman's country residence is provided.

Messrs. Jackson and Sons are the architects.

PUBLIC WORKS IN THE SOUTH AND WEST OF IRELAND.

No. 3.

THE highway from Ballinrobe to Westport is laid out through a dreary desolate bog called "Mona Lummon." The first two or three miles of this "Sahara" runs through the late property of "the old respectable family of the Gildeas "—alas! now almost extinct in this part of Ireland. This property between Cloonee and Port Royal has some exquisite spots, which may be compared to an oasis in the desert. Derassa, so much spoken of in the late trials—Lavelle *v.* Proudfoot—lies west about three miles at the foot of the Partree Hills. The road contractor and surveyor here attend to their duties, as there is not a much better bog road anywhere in Connaught. The water-channels were being dressed when I last was there, I suppose in compliment to Lord Spencer's visit. As we approach Westport pass close by the railway, which runs parallel to the main road three miles east of Westport. The situation of Westport is rather too much in a hollow to compare it, in a healthy point of view, with Ballinrobe. It has progressed but very little indeed since the opening of "Lord Lucan's line" of railroad. With the exception of the promenade called "The Mall," it has no street to be placed in comparison with either Bridge or Market streets, Ballinrobe. It has a population, nevertheless, nearly twice the latter, the moiety of which are (I should say) the friendless poor, from the dilapidated state of the hovels, and the dirty, squalid appearance of these dens of filth and misery. The great feast of attraction in Westport is Lord Sligo's demesne. The main entrance to it fronts the Mall, in which area are situated the principal hotels of the town, Levingstones corn stores and brewery, and the Roman Catholic Chapel, which is but a poor building for a place possessing 4,000 of the faithful followers of Pio Nono. The demesne is free for the ingress and egress of the public, who are not allowed to carry any parcels or baggage with them. The little river flows through it, and empties itself into the sea beyond the "castle" of Lord Sligo. The parish church is in the demesne, about midway from the Mall to the quay, and here repose till the day of resurrection all that is mortal of the late Marquis, &c. The graves are simple and unadorned, a large plain white marble Roman cross indicating the grave of the late proprietor, while polished red granite flags shew where lie the rest of this noble family.

Westport House, or "castle," has not much to boast of—it is a plain, substantial baronial residence, with the eagles of the family ornamenting the eave-course, and over the principal entrance the arms of the family, with the well-known motto "*Suivez-raison*" engraved thereon. The late member for Mayo resides in a rather humble domicile about one-fourth of a mile west of the castle; it is in keeping with Lord John's tastes, who is more of a farmer than a legislator.

The quay of Westport had a most woebegone appearance last October—immense stores and no trade, Customs warehouses and nothing in bond, a few straggling boatmen "loafing" about the inn, and a policeman or two scanning over the pages of the "Hue and Cry," are the only signs of life to be met with now at the quay of Westport. The quay is about an English mile west from the workhouse. I must confess the disappointment I felt when I caught a glimpse of the bay with its 365 islands (query are there so many, it matters not). Those islands should be planted, as they have nothing beautiful about them at present.

Croaghpatrick, or "The Reek," domineers the bay—it can be seen of a clear day sixty miles at sea; its purely conical shape distinguishing it from other mountains of nearly a similar height in the west of Ireland. Tradition ascribes this hill to be the spot from whence St. Patrick "banished the toads and vipers into the sea for ever!" It is a noble hill; and here my Lord Spencer and party enjoyed a day's shooting while on a visit last autumn to the Marquis of Sligo.

I must now speak with surprise at the supineness of parties who have bathing-lodges along the shore round Clew Bay, not erecting bathing-boxes. Where people go to enjoy a tumble in the briny wave, a place for dressing and undressing is necessary, and nothing indicates a greater lack of civilization and a more utter disregard for decency!

A couple of landing places were being erected at Rossbeg: very needful those works are on the south shore particularly. From this on through the Barony of Murrisk the highways were well attended to. There is an hostelry at Murrisk called "The Croaghpatrick Tavern," kept by a man rejocing in the name of Needham; I felt curious about from whence this Boniface migrated, and was led to believe his ancestry came from the north, probably an offshoot of the noble house of Kilmorey. Murrisk Abbey is close by; it is a very plain little building; the masonry is, however, not to be despised. Here are deposited the remains of the Garvey and M'Donald families.

Returning to my description of Westport. Its streets and paths are fairly attended to under the new *régime*. Barrack-hill is unapproachable, with its little barracks, by a toilsome and laborious journey up a rough and irregular incline of at least one foot in six; it is from this steep thoroughfare that Bridge-street and adjoining thoroughfares suffer so much from the floods that accompany any heavy rains. There are no public buildings worthy of notice in Westport. The private house built by the late Mr. Clendining is a good-sized, roomy-looking edifice; its founder has a statue erected to his memory by (I suppose) the people on the estate over which he was agent for a number of years; the pillar on which the statue is placed appears rather dumpy, like that of O'Connell at Ennis. Why do they spoil those things in this country? We have a fair share of average talent in that line in Ireland.

I took my seat in the train for Athlone at the handsome station-house of Westport, and found the line very good as far as Claremorris, between which place and Athlone if there be a purgatory on earth it is during the time occupied in reaching Athlone; this is an intolerable nuisance to travellers who do not wish being knocked about as if on a treadmill. I hope to be pardoned for the length of this article, and I shall conclude by directing the attention of Lord Lucan and the directors to the roughness and jolting which passengers are subjected to on the Great Northern and Western Railway of Ireland.

February, 1870. C.E.

ACCIDENT AT LIMERICK.

IN the vicinity of Thomond Gate, Limerick, are a number of old unoccupied houses, from which gradually the wood-work composing the door jambs and part of the flooring have been disappearing, stolen away by the wretched inhabitants of the neighbourhood, and used as fuel. On Wednesday evening, four old women made their way into one of these houses, and, finding that all the available timber-work had been already appropriated, commenced to disturb some rafters, which, being partly rotten, soon yielded to their efforts; but no sooner were they removed than the entire roof fell in upon the unfortunate depredators, and buried them completely in a pile of *debris*. The shrieks of the wretched creatures soon brought help, and after a little time they were removed from under the mass of slates and rubbish, and two of them who were badly bruised sent forthwith to hospital. One has only received a few immaterial bruises, but the other had her thigh broken, and was otherwise badly hurt. She died soon after in Barrington's Hospital.

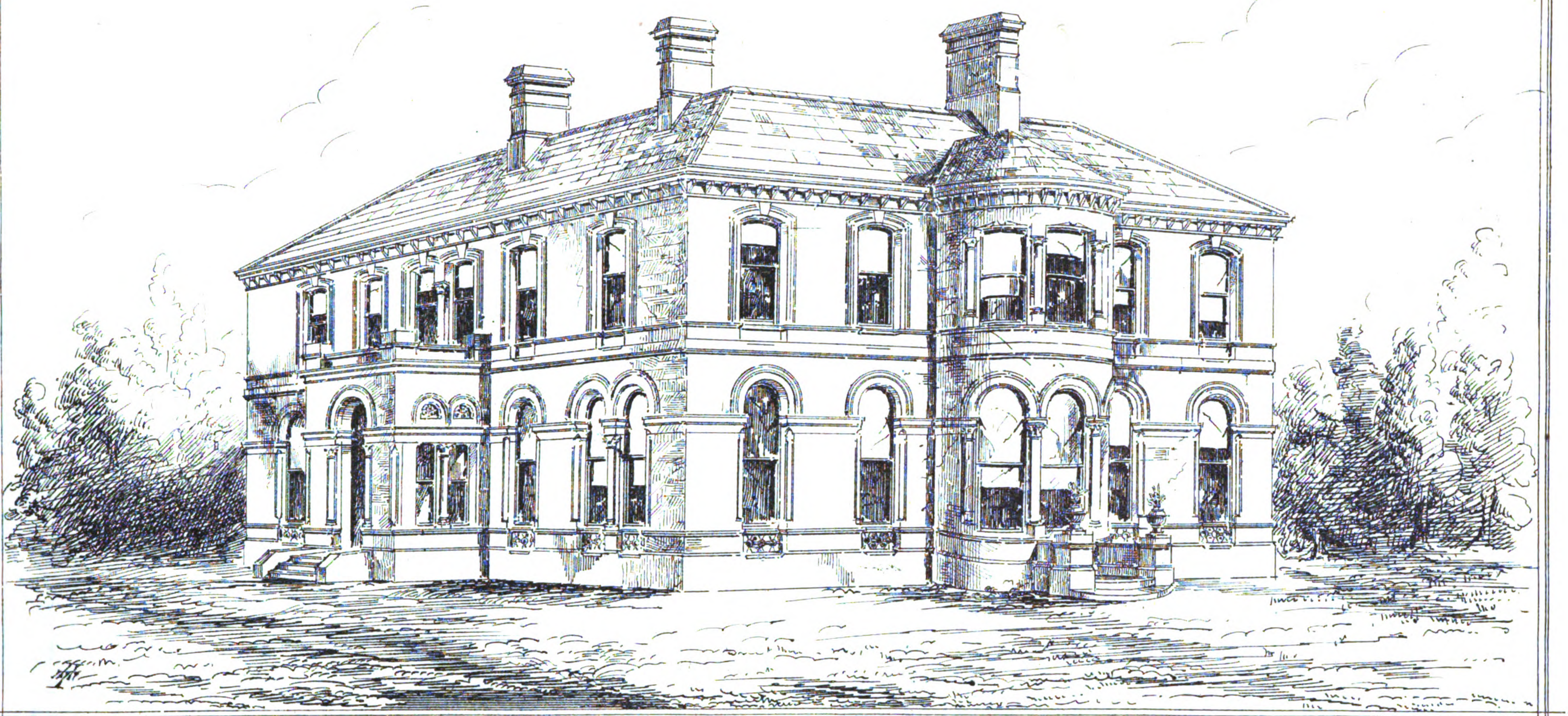
RAILWAYS.

DUBLIN AND DROGHEDA.

From the accounts of this company it appears that the net profit, after providing for current expenses, interest on loans, and dividends on preference shares and stocks, is £21,791 3s. 9d., out of which the directors recommend a dividend on the ordinary stock of the company at the rate of 5 per cent. per annum, less income tax. This dividend will amount to £16,495, and leave a balance of £5,296 3s. 9d. Of this amount it is proposed to write off £500 from the renewal of bridges account, and to carry the remainder, £4,796 3s. 9d., to the credit of the current half-year. There has been an increase in every branch of the traffic during the past half-year, indicating a continued improvement in the general trade of the country. The receipts of the year just concluded exceed by £3,050 those of the preceding year, and it will be seen by the table appended to the report that for some years the traffic of the line has continued to increase at the rate of about 3 per cent. per annum. The principal increase in the expenditure is in the locomotive department, a sum of £800 having been charged for renewals of engines. The total working expenses for the half-year have been at the rate of 43 per cent. of the receipts, and are as moderate as they can be, consistently with the maintenance of the line and the works in proper order. In pursuance of the intention expressed in the last report, the sum of £15,000 of original stock has been issued on favourable terms, and the expense attending the operation has been charged against the revenue of the past half-year. The redemption of the 5 per cent. shares, authorised by the resolution of the proprietors of 27th February, 1868, has been completed, and guaranteed 4½ per cent. stock has been issued in lieu thereof, to the extent of £120,000. There is a balance of £5,275 guaranteed 4 per cent. stock still unissued. This the directors propose to issue during the current year, and charge any discount there may be upon it to revenue. The working plans for the North Wall extension are in course of preparation, and as soon as they are prepared the usual steps will be taken to purchase the land.

DUBLIN, WICKLOW, AND WEXFORD.

The usual comparative statement of traffic receipts shows that an increase has taken place in every description of traffic, except minerals, in which the falling off is considerable. The improvement in ordinary passengers is the most encouraging, but that in goods, parcels, and cattle is also satisfactory. It is to be observed, that the half past-year was marked by no peculiar feature, and therefore the increased receipts may be looked upon as due entirely to the natural development of the resources of the line. The present statutory form of accounts admits of a perfect comparison of the items of expenditure between the last and the corresponding half-years. This exhibits on the whole a saving of £432 15s. 6d. The cost of maintenance of permanent way, works, and stations, shows a large increase. The traffic expenses have been increased by the extra through trains between Westland-row and Bray, which have afforded such convenience to residents along the line; but a saving has been effected in the cost of locomotive power and in the carriage and wagon repairs, notwithstanding that one locomotive engine has been completely rebuilt, and three new break vans made during the half-year. A most gratifying improvement appears in the item of compensation for personal injury, which during the past half-year has only amounted



VILLA at SYDENHAM near BELFAST, Thomas Jackson & Son, Architects.

to £25 3s. The net balance on revenue account available is £27,790 13s. 3d., out of which the directors recommend payment of the full dividend on all the Preference shares, and a dividend at the rate of two per cent. per annum on the original and ordinary stock and shares of the company. This will leave a surplus of £4,276 12s. 5d. to be carried over to the next account. Considerable progress has been made in the works of the extension. The tunnel at Ferry Carrig, the heaviest work upon it, has been commenced at both ends, and the earth works and masonry on the remainder of the line are also being pushed forward. There are yet £47,000 of the preference shares under the Act of 1865 intended for this extension still to be issued. Of these the directors of the London and North Western Railway Company have agreed, when they shall have been empowered to do so, to subscribe for £30,000, leaving thus £17,000 for the shareholders and the public to take up.

MONOGRAMS.

(Continued from page 26.)

A FEW words on the principles to be followed in constructing these so-called monograms will appropriately conclude this paper. It is a great fault with the designers of these devices in the present day that they follow no rules, but string together higgledy-piggledy the letters they purpose to honour, and then endeavour to convince themselves that they have elaborated a strikingly beautiful monument of art. It has probably never occurred to them that in order to render such work of the slightest value in an artistic point of view, some principle should dictate it, some idea should pervade it. And if they have not considered this fact, they have probably overlooked another—namely, that a knowledge of principles results from study, and that their successful application is the consequence of ability aided by experience. It is not to be wondered at that persons who have never studied the subject should fail to evolve out of their inner consciousness compositions that will bear examination.

The first thing requisite in a thing which has to be read is *legibility*. Here we at once join issue with many monogrammatists who are of opinion that the monogram should not be decipherable at the first glance, but that it should involve some sort of puzzle. No doubt, where many letters, as of an entire name, for instance, are interlaced, a momentary bewilderment may be experienced even by the most apt monogram reader. This enigmatical condition, however, should not be sought for by the designer, but rather as much as possible avoided, and the monogram rendered as legible as the materials permit. Also, there should be an *order* in which the letters are to be read, otherwise the same design might stand for A Z or Z A. To this end some rules should be adopted that appeal to the common sense of the reader.

Now, it seems only reasonable, in a language which is read from left to right, that a combination of initials, or of the letters of a name, even though ornamentally written, should be read by the same rule. Hence, we place the letters in our monogram in such a way that the one to be read first is to the left, and so on to the right. Sometimes, as where several letters cluster round the initial J, it is more convenient to draw the monogram so as to read from above downwards.

In monograms containing but two letters, the letters should be of equal size, and the reading is from left to right.

In monograms containing more than two letters, one letter, the most important, generally has more *prominence* given it than the others.

The important letter in an initial monogram is the initial of the surname; in a word-monogram, the initial of the word. Just as we write May, and not maY, so we should, in designing a monogram of this name, make M the prominent letter.

In a name monogram, the principal letter is to be read first; in an initial monogram, last.

The necessary prominence is obtained by causing the important letter to embrace all the others, or, at all events, the external letters right and left. In order to do this, the letters must be broader than the others; it should also be a trifle longer from above downwards, and somewhat stouter in outline. In illustration of what is meant, take a pencil and a threepenny-piece, and draw round the latter a circle, pressing gently with the pencil. Then move the coin so that it covers rather less than one third of the first circle, and draw the pencil round it as before. Then take a sixpence, and place it over these two circles, so that the outer edge of one appears as much to the left of the sixpence, as the outer edge of the other appears to its right. Then draw a circle round the sixpence, pressing rather more heavily than before; and on removing the sixpence, a rough monogram of the letters O, O, O will be seen; which will shew what is meant by order and prominence of letters.

The *shape* which the monogram should assume has to be considered. It is the opinion of most monogrammatists that the general outline of the design should have reference to a circumscribing figure, such as an oval or a circle. This is sound doctrine enough if a circular or oval field has to be filled, as in the case of a coin or of a ring. Barclay's designs for marking silver plate shew well the importance of filling the field, and the advantage to the design when arranged with that object. So, when a button, brooch, scarf-pin, or other article which presents a small circumscribed field has to be ornamented, undoubtedly the design should have reference to the shape of the thing. But when a piece of note-paper or a soup-tureen, or a chair-back has to be marked, where only a small portion of the field has to be filled, it it out of all question to attempt a design with reference to the outline of the object. Nor need any imaginary circumscribing line, in our opinion, be drawn. If the design is neat and compact, and not straggling, it does not matter, in our view, what shape it assumes, when small on a large field, for the eye does not then connect the circumference of the design with the circumference of the object. Compactness is the only important element. A design which goes flying about all over the place, defeats the intention of covering only a small portion of the field.

The *size* of the monogram, under these circumstances, is a question of individual taste, just as much as the size of the type in which a book is printed. Personally, for note-paper, we like uncial letters; but most people prefer smaller letters.

The *compactness* of the design depends to a great extent on so arranging the spaces between the lines that they shall be nearly equal in area, otherwise the drawing will look crowded in one part and straggling in another. A good deal of practice and ingenuity is required to manage this nicely, so as to avoid the appearance of effort in the contrivance. In addition to this, the letters should be interlocked. This is effected by taking care that in all cases where lines cut each other, the crossing should be over and under alternately. Flourishes and other ornaments may be sparingly introduced, if equality of areas and alternate crossing cannot be compassed without their aid. But it is higher art to contrive the effect of compactness by modifying the letters themselves, lengthening here, widening there, pinching, adding a finial, and so on, to adapt each to its special position. In our opinion, monograms cannot be too severely drawn; profusion of ornament makes the composition heavy; ornament should only be allowed where the design *requires* its addition. Experience alone, and what, for want of a better explanation, is called taste, can guide the draughtsman to distinguish between the use and abuse of ornament.

Lastly, a *balance* should be aimed at in the finished work. What constitutes balance can hardly be explained, any more than what constitutes harmony in colouring. It may be replied that certain saturating proportions of the primitive colours satisfy the eye and produce harmony. That is true theoretically; but practically, it is found that in the conception of genius there is constant departure from rule, which pleases the educated eye; just as in music an occasional discord, or in poetry a spondaic verse, pleases the educated ear. The same applies to balance in designing. A balance may be got by working equally from both sides of a centre, but yet the work may not please the artist's eye. If it does, it is most likely good, whether truly balanced or not. If it displeases such an eye, there is probably some lack of feeling in it; though, possibly the artist may not be able to point out exactly where the defect lies. But he knows that he would have done it differently.

Reversed letters are totally inadmissible in monograms which are to be read in the ordinary way. If intended to be deciphered by holding before a looking-glass, then a reversed cipher would be in excellent taste. In some cases, as of pierced monograms—as, for instance, in the G. R. on the gates of the Marble Arch—the reversed letters are correct, because there the intention is that the monogram shall be read from either side.

As for *eccentric monograms*, and the unfortunate bee which always creeps in where one of the initials happens to be a B, the less said the better. They are but puns, mostly without even the redeeming quality of humour. The rebus is not a monogram; it is a puzzle *by things* represented; figures or pictures being employed instead of letters. The rebus, as Camden has it, is the device of those who lack other wit to express their conceit.

In making choice of an *alphabet* to work from, whatever period is selected, its leading features must be adhered to, or the harmony of the composition will be marred. Nothing is more distressing than a design which has the appearance of having been commenced in one century and finished in another. As an illustration of the bad effect of mixing styles, take the *chiffre Napoléon*, which is fashionable in Paris. Nothing can be more hideous.

Individuals will, of course, fix on the period they prefer as a basis of operations. In our judgment, no letters are so graceful, none so elastic, and none, therefore, so suited to decorative purposes as those in vogue in the thirteenth and fourteenth centuries. Choice of the alphabet of this period, too, gives the alternative in many instances of using round or square letters, in accordance with the exigencies of the design. The round letters are the more elegant, and are more characteristic of the period, and should be used by preference; but the Roman or angular D, E, H, M, N, T, and V, may be introduced without mixing the style.

In monogram dies for stamping note-paper, we prefer the letters to be slender and cut solid. Shading should not be attempted except by experienced hands, possessing an intimate knowledge of the style imitated; and, certainly all the letters in each design should be alike, whether solid, shaded, or in outline.

MESSRS. MARTIN AND SON'S TIMBER SALES.

Messrs. Martin and Son's sale of mahogany came off on Tuesday last, and, although the weather was anything but favourable, there was a large and respectable attendance of the most extensive cabinet manufacturers, and of the trade generally. The bidding was animated, with sharp competition, and almost the whole cargo, consisting of nearly 300 logs, was cleared off, the prices ranging from 4½d. to 8d. The wood was certainly very superior, being well-shaped logs, and almost faultless. By our advertising columns it will be seen that this old and enterprising firm will have another auction of timber and deals on the 22nd inst.

The Kingstown Royal Harbour Boat Club invite tenders for the erection of the "foundation, basement, and boat store floor of a club-house, and the formation of a slip, at Kingstown," from plans by Mr. W. Stirling, architect.

OXYGEN GAS AS A NEW MANUFACTURE—ITS USES FOR HEAT AND ILLUMINATION.*

(Continued.)

BUT the industry of oxygen is not only interesting with respect to the development of heat under high pressure, but also with respect to the production of light. Every solid substance, indeed all substances, transform heat into light after a certain degree of temperature has been attained. The transformation is the greater the less fusible and less oxidable the solid substance is which is heated. The oxy-hydrogen flame, produced by the combustion of two volumes of hydrogen with one volume of oxygen, is little luminous, because it does not contain any solid element capable of transforming part of its heat into light; the flame of coal-gas is, on the contrary, highly luminous, because it contains carbon in a state which, being heated, becomes self-luminous at a high temperature—that is, *irradiating*. This flame becomes very bright if oxygen is introduced into the interior, but light diminishes again when a certain limitis passed. The irradiation of the carbon increases with the temperature; the jet of oxygen in the flame of a gas-burner increases its lighting power, and more and more as the temperature of full combustion of the carbon is approached; but if that be passed, the luminosity again diminishes. We may here just remark that these accepted views as to the theoretical causes of more or less luminosity in flames being due wholly to solid (or liquid) matter exposed to heat have received a serious shock from the recent experiments of Dr. Frankland, who has found that luminosity is increased in flames free from such solid matter by mere increase of the pressure under which the gases are consumed. The subject is still obscure in many respects; but with a substance which resists very high temperatures, and for which the law of irradiation, as stated, remains true, it will be possible to educe a mode of illumination of a powerful intensity. Two different modes of application then, for the oxygen as a light of powerful illuminosity, are derived from those fundamental notions, viz:—

1. To bring the molecules of carbon of the illuminating gas to the maximum of irradiation, by raising their temperature by burning with the intervention of a current of oxygen gas:
2. To utilise the power of irradiation of a refractory substance (infusible and non-volatile at the highest temperature) submitted to the oxy-hydrogen gas in combustion.

M. Archereau is the eager promoter of the first method. He preserves untouched the actual system of lighting with gas, and merely injects into the flame of each burner a current of oxygen, regulated in such a manner as to bring the molecules of carbon to the maximum of irradiation. Experiment has proved that coal-gas which requires 16 litres to afford the light of one standard candle per hour, used in the ordinary way will, if oxygen be introduced into the flame, require but 2 litres of the same coal gas and 1 litre of oxygen to give the same light for the same time: thus a saving of between 40 and 50 per cent. is realised on the actual mode of lighting by gas. It will be in the recollection of some of our readers that this method of oxy-coal-gas burning was tried in London, about eight or nine years ago, under the auspices of Mr. Thos. Page, C.E., upon Westminster Bridge, but was not found to answer in point of cost. That was not to be wondered at, for cheap oxygen was then unknown. There was probably, also, a good deal of prejudice at work, and horses were said to have been startled by the glare of the light, the intensity of which was surprising. Its want of success tells for nothing against M. Archereau's existing proceedings.

This mode of lighting with coal-gas and oxygen is interesting with respect to public health. The combustion of a common gas-burner produces in the atmosphere an alteration of the same order as that determined by the respiration of a human being. The oxygen is absorbed, and its place is taken by carbonic acid, in addition to which we have here sulphuric acid and ammoniacal compounds. The introduction of the oxygen into the interior of the flame does not alter the exterior; all is done within the flame; the oxygen is destructive to all the deleterious products except the carbonic acid, which, with water vapour, alone are released. Considering the small volume of carbureted hydrogen gas burnt per hour, it will be found that the atmosphere is not only less vitiated, but also less heated by illumination on this method; facts well deserving of being taken into consideration.

Notwithstanding the efforts of the inventor to popularise this method, it has not yet been submitted to what he views as a practical trial. The necessary laying down of lines of small mains in the streets, for the conveyance of the oxygen, has proved the principal obstacle. Paris, London, and all our great European towns are already so much undermined, that more pipes are a real difficulty; and it may be perhaps not without some show of reason that it has been said that there is some danger in these two gases coming together, side by side, in ill-jointed pipes beneath our pavements. The method becomes more practicable when the oxygen has to be supplied to the burners of theatres or public halls, &c., the tubing for the oxygen can then easily be isolated: the gas is stored up, under pressure, in a gas-holder, in which it is directly brought from the works.

The light emanating from the molecules of carbon thus brought to the point of maximum irradiation, is very agreeable to the eye shaded from the flame; it is itself of a light yellowish-white colour, which submits to diffusion, and which does not alter the daylight colours of dyed fabrics. It is a mode of lighting which may be thoroughly adapted to that mode of lighting which is called in France "the illuminated ceiling," such as is seen at the theatres du Châtelet and Lyrique, in Paris. It is equally adaptable for the footlights, which, however, would have to be provided with ground glasses to protect the eyes of the actors. Some great advantages have also been pointed out in the power of locally distributing the light at will over the scene, where novel effects could be very easily and strikingly regulated.

The other process of lighting, promoted by MM. Tessie du Motay and Maréchal, and which has been tried last and this year at the Place de l'Hôtel de Ville, and at the Tuileries, in Paris, is the resumption in principle of the ancient so-called "*Drummond light*," and which consists in *irradiating* a ball of quick-lime under the influence of the combined flame of oxygen and hydrogen. The Drummond light has had many sudden changes of fortune; at its origin it blew up the front of the Passage des Panoramas, in Paris, and a lighthouse in England, and for that reason was entirely abandoned in practice for many years.

We must pause here for a moment's digression, to remark that the late Mr. Under-Secretary Drummond, an able and ingenious man, but whose position alone probably enabled him unchallenged to indissolubly connect his own name with the limelight, had in reality little or no claim as an original discoverer or inventor to any such connection. All that is essential to the production of the limelight had been long before him anticipated—slightly by Dr. Clarke, completely by Dr. Robinson, of Armagh, who, in a paper in the Transactions of the Royal Irish Academy, vol. 13, for 1818, on the combustion of oxygen and hydrogen gases, at p. 98 and subsequently, forcibly refers to the light disengaged from various solids exposed to the oxy-hydrogen flame. "The intensity of this (the light) is astonishing. . . . The glare of some bodies, as lime and magnesia, is intolerable, even when the eye is defended by dark-green glasses" (p. 98). Dr. Robinson then proceeds to discuss the physical theory of this intense light, and in the same page equally anticipates nearly all that has been since suggested on this, as yet, incompletely understood subject. Drummond's real claim is, we believe, limited to that of being the first to propose the application of the limelight to geodetic operations, and having carried out with success his proposal.

Many improvements have been adapted to the limelight apparatus, which are very simple, the main point being to isolate the two gases in their conveyance, for, inoffensive when separated, they risk destruction to everything whenever they are united. The service of the theatres, as yet one of the principal applications of this source of light, failed to be fully successful through guilty ignorance, which in its early career caused some deplorable accidents. But to return: the projectors of this system do not employ lime as the irradiated substance, but magnesia, prepared in a special manner, as indicated by M. Caron.

Considerable masses of magnesia in the form of carbonate are found in the Island of Eubéa containing traces of lime, silica, oxide of iron, and veins of serpentine mixed with large flakes of silex. The mass is calcined in order to disintegrate it, and the serpentine and flint, which do not break up, are picked out. The magnesia, after calcination, in order to prevent the contraction which would otherwise appear after baking in the moulds, is made into a paste with water to which 10 or 15 per cent. boracic acid has been added, and it is then shaped in iron moulds with strong compression. The material is white, compact, and hard, when thus divided into cylinders of 6 or 7 millimétres diameter by about 30 millimétres in length. Such a cylinder is the source of light when subjected to the oxy-hydrogen flame. The cylinder of magnesia is held in such a manner that it may receive the jets of the mixed gases oxygen and hydrogen, emanating from three convergent burners, so arranged as to heat the cylinder in a uniform manner. The column of magnesia becomes soon irradiated. and then appears as a bright point, whence emanates a blindingly white and dazzling light.

This was tried first in public in Paris, at the Place de l'Hôtel de Ville, where 40 burners of this sort were worked comparatively every evening against 40 ordinary gas burners, each system lighting one side of the square: the effects were extremely striking—the gas flames appeared to be mere smoky red dots. One burner of this magnesia light is equal in intensity to 25 or 30 burners of the best commercial coal-gas; so that it is contended one new burner (magnesia) may be substituted for twenty of the old ones (coal-gas) in future lighting. The first question which occurs is this: Will the same extent of surface receive the same quantity of light from this one, instead of from twenty burners? An optical law tells us that the same total of light illuminates much more and better when diffused from several different centres than when concentrated into and radiated from a single point; and the experiments which were made for lighting the Place du Carrousel and the Palais Royal at Paris with the electric light elevated in the centres of these squares, have well proved the uselessness of such a mode of illumination. In the present case, when the experiment was made with an equal number of oxy-hydrogen = magnesia, and of coal-gas common burners similarly hoisted, a very characteristic difference ought to be expected. And yet, if the difference of illumination thrown over equal surfaces at equal distances by the two systems at the same time be observed, it is surprising in what confusion as to principles we find ourselves by the result. On one side, brilliant points like stars, upon which the eye cannot rest, but which keep the power of their beams in a state of concentration, as judged by vision only. On the other side, dull yellow flames which yet disperse the light. The colour of the flame must equally be taken into consideration; and of all the usual flames, the tint of that of the coal-gas is the more agreeable to the eye; it gives the best distinctness to general objects, and is most favourable to diffusion. The increase of the power of irradiation of the carbon of coal-gas, intensified by the calorific influence of oxygen admitted to the flame, as we have described, does not alter that tint, it is stated, but only intensifies it. Thus this circumstance proves in favour of the first-described project. It is also to be remarked that it is of great importance, in order to give the maximum of light with the magnesia system, that the velocity of efflux of the two gases be strictly regulated. The smallest variation in either is a cause of reduced temperature, the slightest amount of which produces a very sensible diminution in the intensity of the emitted light. If, also, the cylinder of magnesia is badly made or badly centered, it will not any longer furnish its share of light. It will be evident, in fact, that such a mode of town illumination must require a very active, constant, and very skilful inspection, and yet be liable to frequent accidents.

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* From the *Practical Mechanic's Journal.*

With respect to cost, the inventors state it to be 50 per cent. below that of the actual gas-lighting. The estimates leave room for doubt as to the cost of the cylinders of magnesia, however, and M. Caron acknowledges that magnesia, although it wears away less than the lime, nevertheless does wear away considerably, in consequence of an actual carrying away of matter by the mixed gas-flame; and thus the intensity of the light which has to be paid for varies in proportion. How long each cylinder will last, must thus be taken into consideration. M. Caron assures us, however, as the result of his most recent researches, that he has found the true refractory substance which gives the final solution of this question. This new substance is the earth or oxide zirconia. M. Caron moulds this oxide of zirconium under powerful pressure, and has attributed to it, in addition to greater durability in the flame, a much higher power of irradiation than is possessed by magnesia, which he proposes definitely to abandon. Experience has not yet proved that zirconia is itself absolutely fixed; but its illuminating power is intense. It is, however, more than doubtful whether illumination by the irradiation of refractory matters is practically and advantageously applicable to the illumination of towns. It may prove of occasional value, as for projection in theatres, and for some other and graver objects; but the oxy-hydrogen light with the lime, the magnesia, or other refractory substances, will suffer the same discredit as the electric light if its right uses are spoiled by misapplications. The essential question, which affects its future as well as that of its rival system, the economical production of oxygen, has been solved; it is of equal importance now to find a body of strong irradiating power endowed with a long duration and perfect steadiness and simplicity of action. Whenever this double question shall be solved, the application of the electric light as a means of illumination in theatres, and in all those cases where it may be impracticable or too expensive to produce it by means of magneto-electric machines, wrought by power, will be abandoned.

All depends upon cheap oxygen, the production of which at a low price is not unimportant also in relation to public health. Oxygen has been administered for several years past in cases of chest disease, and this treatment is viewed abroad as likely not to be dispensed with. If it be really efficacious, it would be obviously important to supply the element of life at the cheapest possible rate. Might it not be advantageous to ventilate the wards of hospitals and barracks, &c., with air more than naturally rich in oxygen? But that question belongs to the applications of the extraordinary oxygen called *ozone*, rather than to that of the element in its ordinary state, in which it is applicable to illumination. Further experiments, with public aid, are stated to be still in progress in Paris, with a view to rendering—notwithstanding the difficulties which, in everybody's hands, still beset the subject—the magnesia, or lime, or zirconia light materially cheap, steady, and manageable.

The supply of zirconia (a rare mineral body) seemed at one period a difficulty, but that is stated to have been removed by the discovery of abundance of crystallised zircons, even in France; and from Ceylon, and probably from Australia and California, these may be had without limit. The difficulty as regards the light itself seems at length to be resolved simply into one of keeping the pencil of the moulded and compressed earth from being carried off in minute particles by the gas currents and flame. But assume the whole effectually accomplished; we confess we entertain great doubts that this method of illumination can ever prove good for cities or public places. The question is really not one of physical optics, or of mere amount of light derived at a given point, at a given cost. It is rather a physiological one. The illuminating points *must* be exposed more or less directly to the eye. Just in proportion, then, as they are intense in light emission, have they a perfectly blinding effect upon the eyes of those obliged to encounter their direct rays, which prevents for the moment vision in all other directions. This is just the most fatal of all possible evils in any system of street illumination, for a man may be run over just at the very instant at which his vision for all objects around and near him is destroyed by his eye encountering the glare of a distant point of intense light.

If, indeed, M. Caron, or those who act with him, can devise any method, whether by peculiar position or by opaque or only more or less translucent partial shading of these zirconia lights, whereby they shall diffuse their splendid beams in the necessary directions, and yet that the focus of light itself shall be hidden from all eyes, or from all under the condition common to passengers in the streets, then, and then only, do we think that their method may become publicly available, and that the unquestionable advantages of brightness, greater than any as yet common, may be secured to our streets at a cost as small, if not smaller, than that of the existing gas illumination, which, great and important as it is, yet leaves so much still to be desired.

LAW.

COURT OF CHANCERY APPEAL—FEB. 7.

(Before the Lord Chancellor and Lord Justice of Appeal.)

Hewatt v. *Nolan and others.*—Their lordships delivered judgment in this case, which was argued a few days since. It was an appeal brought by the plaintiff from an order pronounced by the Vice-Chancellor last term, dismissing the bill with costs. The plaintiff is the public officer of the Provincial Bank, and the defendant is the builder of the new bank in College-street. The bill was filed for the purpose of setting aside three certificates of the architect, Mr. W. G. Murray, who was made a co-defendant, on the ground of collusion, excessive payments, and want of authority, &c. The three certificates in question were given for extra works, and amounted to upwards of £7,000. The bill alleged that Mr. Nolan contracted, in 1863, to build the premises for £20,350, that the bank had already paid £26,800, of which sum £7,200 was paid on account of extras, and that the amount of the three certificates which Mr. Murray had signed made the aggregate of £35,770 as the certified cost of the works.

The Lord Chancellor said the question was, whether by the contract between the parties the certificate of the architect was to be final and conclusive. It was plain that the agreement did not make his certificate final as to extra work; and to hold that it was so would in this case be to work a manifest injustice. No one could doubt but that there were errors and negligence on the part of the architect, which rendered it necessary to have an inquiry, so as to obtain justice. His action was *ultra vires*, and, although the prayer of the bill could not be complied with so far as setting aside the three certificates, still one of them—namely, the third—would be set aside, and the others would be declared as not conclusive as against the bank.

The Lord Justice of Appeal said it was impossible not to see that gross injustice would be risked if the bank were to be compelled to submit to the demand made on them, without any inquiry. The account became inflated under the manipulation of Mr. Dudgeon, who had never seen one foot of the works done. He had come over from his department in the War Office, and the information on which he acted was supplied to him secondhand by O'Neill and Nolan, and under his judgment the claim for £3,800, which was made for extra work in 1866, swelled up to £7,689—more than double the amount in 1868,—and that without one stroke of a hammer laid on the works in the interval. The contract had been ignored when it told against the contractor, and was only complied with so far as it was in his favour. The bank were entitled to have an inquiry, unless by their own act they had prevented themselves from having such inquiry. The defendants in the appeal relied on the terms of the agreement as establishing that the certificate of the architect was conclusive; or, if not, still that the question should be tried at Nisi Prius, and not in the Court of Chancery. The conclusion at which he arrived was, that the certificate of the architect was conclusive as to matters of original contract, and the 5th section of the agreement did not apply to extra work or to price rates, which were completely *de hors* the contract; the architect had no authority to give a conclusive certificate as to the latter work, and even if extra work was within the 5th section of the agreement, the architect had overstepped his jurisdiction; he had disregarded the contract altogether, and consequently his certificate should be declared not binding on the bank. The next matter was, whether the defendants in the appeal had a right to insist on the question being tried at Nisi Prius, in preference to the Chambers of the Vice-Chancellor. Constituted as juries were in this country, in nineteen cases out of twenty trial before a judge was infinitely better than trial by a jury; and the provision in a late act, empowering questions of fact to be tried by a judge, which was a most wholesome and beneficial provision, was virtually rendered useless by being clogged with the condition that both parties should consent thereto. It would be an act of perverse mischief to send the case from the Chambers of an Equity Judge to be tried before a Dublin jury, and therefore, in his opinion, the Chamber of the Vice-Chancellor was the proper place to determine the questions between the parties. The result would be, that the decision of the Vice-Chancellor should be overruled, and the two first certificates declared not binding on the bank; that the account as prayed should be taken; and in taking the account the certificates should be *primâ facie* evidence that the work mentioned therein was done, and was of the value therein mentioned, with liberty to the bank to rebut or falsify same, the price to be as on a *quantum meruit;* the question of costs to be reserved, and the case to be remitted to the court below to take the accounts. At the same time, he would recommend the parties to make an equitable division of the money in court instead of proceeding with the inquiry; and both parties to abide their own costs of the litigation.

The counsel on both sides stated that they would endeavour to have the suggestion of the court carried out.

ROLLS COURT—FEB. 8.

Denanny v. *Conolly.*—The plaintiff sought to recover £38 15s., the balance of an account for the erection of a monument in Glasnevin Cemetery. The defendant had agreed to erect the monument and sublet it to the plaintiff, who covenanted to carry out a design to be furnished by Mr. M'Carthy, architect, and to complete it within four months, under a penalty of £5 per week. The defendant disputed the claim, on the ground that it was in excess of the contract-price, and that, as the work was not completed within the four months, penalties to the extent of £35 had accrued. The plaintiff relied on a waivor of the original contract, and as to the penalties, that the design was not furnished in sufficient time. The jury found for the plaintiff, with £37 5s. damages.

THE PRINCE CONSORT STATUE.

"S. P. C." (under the euphonious signature of "Paddy Whack!") writes to us as follows:—

"A paragraph in your issue of 1st inst. expresses the mystification of a correspondent about a statue in 'Dublin' to the Prince Consort. Perhaps a little bit of thinking over things would let a little light in, and show that the event referred to took place, not in Dublin but in Belfast. It was only an *Irish* event, you know, anyhow; and sure anybody knows that to Englishmen, at any rate, one Irish town is just the same as another, and its not a bit of matter what name you put at it. There's a river in Monmouth, and there's a river in Macedon; and so there's a "b" in Dublin and one in Belfast too. What use making a fuss about it?"

MISCELLANEOUS.

BELFAST UNION.—At a recent meeting of the Belfast Board of Guardians, Mr. Thomas Jackson, architect, submitted a plan for fitting up a portion of the present school building, so as to accommodate the male and female infirmary patients, the school building being sufficient to accommodate both the children and the infirmary patients, and thus prevent expenditure in building a new infirmary. The plan was adopted, and ordered to be sent to the commissioners for approval previous to taking an estimate for carrying out the works.

MR. GEORGE HODDER, a well known contributor to the metropolitan press, is about to publish reminiscences of his personal acquaintance with celebrated individuals, during the last thirty years; with a full account of the origin of *Punch*.

NEW HOUSE PATENT.—Mrs. Irwin, a sister of Mrs' Stonewall Jackson, has secured a patent for an improvement in the construction of houses, which, it is claimed, will create a new era in architecture. Mrs. Irwin proposes six-walled or hexagonal apartments which are not only much handsomer, but really cheaper than the quadrangular form. A wall of 80 feet built in the hexagonal form incloses a third more space than the same length of wall built in the square form, and as these hexagonal rooms fit into each other without loss of space, the gain in the whole building is very great. The patentee also claims that this mode of building gives a greater degree of strength than any other, and that this mode of building, in the hands of a good architect, is capable of assuming greater artistic beauty than the square or quadrangular form. The octagonal building attracted a good deal of attention some years ago, but the hexagonal is claimed to be something entirely new.

Geologists are much interested in the results of the exploration of the deep sea made last summer in H.M.S. *Porcupine* by Dr. Carpenter, Professor Wyville Thompson, and Mr. Gywn Jeffreys. The *Porcupine* was lent for the purpose by the Admiralty, at the instance of the Council of the Royal Society. Chief among the physical facts discovered is, that while the surface of the sea may have a temperature of fifty-two degrees, there are cold tracts and warm tracts below, existing within a short distance of each other, and marked by characteristic differences. The bottom of the cold tract is formed of barren sandstone, mingled with fragments of older rock, inhabited but by a few animals, and those mostly of the arctic kinds. In the adjacent warm area, on the contrary, the botton is cretaceous, and abounding with life. Now, suppose these two tracts upheaved, and became dry land, geologists would naturally believe them to have been formed at different times, and under very different circumstances; and yet here we find them contemporaneous and almost conterminous. Here, then, is a fact which will have to be considered in all future discussions about what is called 'geological time.' Another fact established by this exploration, and contrary to long-received opinion, is, that in the deepest sea yet examined, nearly 2,500 fathoms, the bottom teems with animal life, the animals have perfect eyes. This at once upsets the long-received notion that the depths of the sea were devoid of life and of light. The life is now an established fact, and the light may be inferred, for if there be no light down in these abysses, why have the animals eyes? The whole account of the exploration above named, with its leading results, was given by Dr. Carpenter at the first two evening meetings of the Royal Society for the present session. Interesting as it was, there is yet much more to come out of it; in the meantime, it suggests important questions. If ordinary daylight penetrates to the bottom of the sea, how does it penetrate? or is there at the bottom some kind of phosphorescent light? If a photograph could be taken deep down in the sea, that would testify to the presence of daylight. As to the breathing of the animals at the botton, there is no difficulty; for the late Master of the Mint, Mr. Graham, has shewn, by his liquid diffusion of gases, that air may be diffused downwards to the greatest depths.

A French company was formed some time back for the recovery of the cargoes of the Spanish galleons sunk in Vigo Bay in tho year 1700. The works commenced a few days ago, and already three of the vessels have been buoyed and partially examined. They are found to be in a perfect state of preservation, but bearing a thick coating of shell-fish. Two show traces of having been burned. The engineer who is directing the works is making use of the submarine lamp, and is confident that the smallest object of value contained in the fourteen submerged vessels will be brought to light. The treasure they are known to have carried amounted, in ingots of gold and coined silver money, to the enormous sum of 375,000,000 of francs. Of that amount 43½ per cent., or 162,000,000, go to the government of Spain, and 213,000,000 to the shareholders—when it is obtained.

Another Parisian improvement is contemplated, viz., the construction of iron galleries, enabling passengers to cross the more crowded streets, either under ground or by bridges. The designer is an architect, M. Emile Reine.

Dr. Andrews, vice-president of the Queen's College, Belfast, has been elected an honorary fellow of the Royal Society of Edinburgh, in the room of the late Master of the Mint.

Quite a warm controversy is going on between two American mineralogists, Mr. J. P. Dana and Mr. Brash, and Prof. Rose, of Berlin, with regard to the composition of certain streaks in a species of mica.

LORD PALMERSTON AND THE REPORTER.—To the reporters of his public speeches he was always kind and considerate. One active gentleman, note-book in hand, had pursued him, on a particular occasion, hoping to find busy employment for his stylus, and would have been disappointed, but for the special good-nature of his patron. There where to be great doings at the presentation of colours to a volunteer corps, and Lord Palmerston having promised to give the affair his countenance, it was expected that he would give it also his voice, and make a speech worth some pains in the taking-down. To this end, a practised professor of stenography, as I have said, followed to the field the noble lord, and put himself in readiness for action. But the presentation of colours went off gaily enough, without speech-making; and when the ceremony was over Lord Palmerston buttoned his overcoat, and prepared, like the rest of the spectators, to depart. It was an awful moment. The desperate journalist went straightway to the great political lord, and said imploringly—"Is not your lordship going to make a speech?" "Why, no," said his lordship slowly; "I don't see that there's anything one can talk about." And then, turning suddenly to the reporter, he added the short encouraging question, "Do you?" Upon which hint the gentleman with the note book spake thus—"Oh, yes, my lord; I'm sure your lordship could easily find something to say that would look well in the papers. Do, now, my lord, be so kind, if I may beg it of you as a great favour. Just half a column or thereabouts." "Very well, very well," said the accommodating Premier; and, advancing to the front of the little stage that had been erected for the beauty and fashion of the neighbourhood, he began to address the crowd who had turned to go, and who now turned again to listen. "I cannot let this occasion pass away," his lordship began, "without trespassing a little on your time and patience for a few remarks," etc. etc. Whatever the subject was, Lord Palmerston treated it in a speech so vivacious that nobody quarrelled with its length, although it was five or six times as long as "half a column or thereabouts." The fact, moreover, stands on record that that same speech was so remarkable an exposition of something or other, that every newspaper in England commented on it in a leading article, and it was the talk of clubs, coteries, and coffee rooms for the full nine days which make up the life of a wonder.—*Cassell's Magazine.*

TEST FOR HARDNESS OF METAL.—The hardness of metals may now be ascertained by aid of an instrument invented by a French engineer. It consists of a drill, turned by a machine of a certain and uniform strength. The instrument indicates the number of revolutions made by the drill. From this, compared with the length of bore hole produced, the hardness of the metal is estimated. It is said that a great proportion of the rails now employed in France are tested by this instrument.

THE HEALTH OF DUBLIN.—In the Dublin registration district the births registered during the week ending February 5th, amounted to 192. The average number in the corresponding week of the years 1864 to '69 inclusive, was 177. The deaths registered during the week were 207. The average number in the corresponding week of the previous six years was 205. Nine deaths were caused by fever, viz., 2 by typhus, 3 by typhoid or enteric fever, and 4 by simple continued fever. Scarlet fever proved fatal in 10 instances. Two deaths resulted from whooping cough, a like number from croup, and 1 from measles. Five deaths were referred to diarrhœa; of these, 3 occurred in the Richmond Lunatic Asylum Erysipelas caused 3 deaths, and diphtheria, 1. Bronchitis was the cause of 46 deaths, and pneumonia or inflammation of the lungs of 3. Five deaths were referred to paralysis, and 2 to apoplexy. Diseases of the heart caused 5 deaths. Twenty-four persons fell victims to phthisis or pulmonary consumption. Cancer caused seven deaths. Of the deaths registered during the week, 22 were ascribed to old age. A child, aged 5 years, died from the effects of an extensive burn. An inquest was held on a boy aged 4½ years; verdict of coroner's jury: "Fracture of the skull, caused by being tossed and gored by a bullock."

A Chinese thus describes a trial in the English law courts:—"One man is quite silent, another talks all the time, and twelve wise men condemn the man who has not said a word."

THE JAPANESE COLONY IN CALIFORNIA—Amongst the Japanese who have arrived in California are four carpenters, and these men are now engaged in erecting buildings for the use of the party. The houses are to be twelve in number, dimensions 36 ft. by 30 ft. each containing four rooms, and built after the Japanese fashion, with low pitched roofs, and eaves extending far over the sills, and forming a balcony or awning around the entire house. The outer walls and partitions are all of sliding panels, that can be shut together at the corners and folded into boxes, leaving nothing but the roof and its supports during the hot summer days. The partition walls are of paper, the outer walls of wood. One room is to be used as a sleeping-room, another as a kitchen, and the two others in each house for silk raising; 50,000 mulberry plants have already been sent out for a beginning. A curious feature of their houses is, that they do not contain a nail, all the joints and timbers being dovetailed together by many ingenious devices, and the whole work, even to the rafters, is as smooth as if it had been polished down with sand-paper. And the Japanese are a neat people, for they use no paint to hide any blemishes of construction or ornamentation, no filigree work or plaster of Paris gewgaws, but every stick in the building is exposed. Every morning as regularly as she cooks the breakfast or sweeps the floor, the Japanese housewife takes a wet cloth and scours the whole interior of the dwelling, leaving no part untouched, and no stain or dirt spot to mar its cleanly appearance. Then the Japanese do not come into the house with muddy boots after the style of the American "sovereign," but, having covered the floor with a neat matting, always remove the dirty sandals before stepping upon it The Japanese carpenter works "towards him"—that is, instead of pushing a plane from him, he reaches out, sets the plane upon the board at arm's length, and pulls it towards him; and he cuts, chops, and saws in the same way. His saws are fixed in handles, like a butcher's cleaver, and the teeth slant or "rake" towards the handle. The planes are constructed like ours, but the wooden portion is very thin and wide. The adze is fastened to the end of a hooped stick, and altogether their tools are different from ours.

MODERN CUSTOMS.—Presentations and Testimonials are largely on the increase; this modern custom appears to extend to almost every household, for no auspicious event is allowed to pass without its being marked by some pleasing souvenir; Birthdays, Christenings, Marriages, the seasons of the year, such as Christmas, New Year, &c., invariably receive special commemoration. The attention of one of the great London Manufacturers, Mr. J. W. BENSON, of 25, Old Bond Street, and of the City Steam Factory, Ludgate Hill, has been directed to this subject. With the view of giving more artistic effect to this custom of society, he has published a most interesting Illustrated Historical Pamphlet upon Watches and Clocks, also one upon artistic Gold Jewellery, Silver and Electro plate; all are profusely illustrated with choice designs, and are sent post free for 2d. each, thus bringing within the reach of those who live even thousands of miles away from London, one of the largest and most artistic collections which can be seen in any part of the world; and, if necessary, designs are prepared to illustrate any special case.

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Proposed New Theatre for Dublin.

QUESTIONS regarding political and religious topics are being daily put forward, and solutions of their knotty points proposed by every variety of would-be legislators. A question on a matter totally converse to any of those lately discussed, has been brought before the "Lord Lieutenant General and General Governor of Ireland": it is this—"Should not the good city of Dublin, with its population of over a quarter of a million, be favored with permission to erect a building in which the 'legitimate drama' could be performed?" The favor is sought for on the ground that Dublin has "*only two* theatres and no singing-halls." We are strongly of opinion that two theatres are quite enough at present. If the lessees of the "Royal" and the "Queen's" could be induced to make certain necessary improvements in their houses, and study to cater as much as possible for the taste of a Dublin audience, it might obviate the necessity for a new theatre, more particularly when we have already within the city bounds several altogether, or partially, "deserted halls."

A few remarks on the movement will suffice for the present.

A "native firm" of music-sellers in Grafton-street having memorialled the Lord Lieutenant to grant a patent for the erection of a theatre on a site at the rere of their premises and extending into Sth. King-street, the Law Officers sat in the Council Chamber, Dublin Castle, on Thursday, for the purpose of considering the memorial. The proposal will, it is surmised, meet with a large amount of opposition from the householders in the vicinity; and, besides the unsuitability of the site, many other objections will be urged against the necessity for a third theatre in Dublin.

When, some years ago, an application similar to the present one was made by Mr. John Knight Boswell, that gentleman had in view what we consider was in every respect a suitable site (in fact, *the best* in the city), viz., the ground on which now stands the Northumberland Baths. Here, *three frontages* could be had, and a separate entrance to each portion of the theatre, with ample carriage space in Beresford-place and Lower Abbey-street. This property was very lately in the market for sale, and could, we believe, be still had on easy terms.

Should the Law Officers, in their wisdom, decide on recommending the Lord Lieutenant to grant the prayer of Messrs. Gunn's memorial, we would urge on them to make it imperative that a more eligible site than the proposed one must be looked for; that the building shall be constructed on the most approved plans, and with due regard for the public safety; and that all its doors of exit should *open outwards*.

Judging from the large attendance at the preliminary proceedings on Thursday, it is evident that the question will not be altogether devoid of interest. We consider it well to place on record in our columns an abstract of what took place on the occasion:—

Serjeant Armstrong and Dr. Seeds appeared on behalf of the Messrs. Gunn. Mr. Exham, Q.C., appeared for Mr. Harris, lessee of the Theatre Royal, to oppose the application. Mr. Joseph, lessee of the Queen's Theatre, also opposed it.

Mr. Exham, Q.C., applied for a postponement, as neither Mr. Harris nor Mr. Joseph had received notice of the intention to erect this new theatre till Saturday, and they had not since had time to collect evidence for the purpose of resisting the application.

Serjeant Armstrong said that they might hear the opening statement that day, and proceed with evidence on some future day.

Mr. Exham did not think that would be fair, as an *exparte* statement might prejudice the public mind, and lead them to believe that an additional theatre was required.

The Attorney-General considered that the statement of Serjeant Armstrong would be of value to those opposing the application, as it would enable them to judge of what evidence would be necessary, and he therefore thought they would hear the serjeant.

Serjeant Armstrong then proceeded to open the memorial of Messrs. Gunn. Under the Act of 56th Geo. III., chap. 57, a power was vested in the Crown to grant a patent for the erection and opening of a theatre for the production of what was known as the "regular drama," and his Excellency had imposed upon the Attorney-General and the Solicitor-General the duty of reporting the advisability of the present project. Memorialists had taken a lease for seventy years of a plot of ground situated at the rere of their premises in Grafton-street. They had also taken a lease of old houses in South King-street, for a long term of years, upon the site of which they proposed to erect a commodious and substantial theatre. They intended to have two approaches to the theatre—one in South King-street and the other in Tangier-lane. The present application for a patent was recommended by a number of respectable citizens. He need scarcely mention that the performance of the legitimate drama could not be attempted without a patent. The plan for the new theatre has been furnished by Mr. W. F. Caldbeck, and its execution would be intrusted to Mr. Meade. It was proposed to accommodate about 1,800; to introduce all the improvements which modern science had secured in the way of light and ventilation.

The Attorney-General asked what was the width of South King-street.

Serjeant Armstrong said it was about as wide as Grafton-street, and he ventured to say there was no better site in Dublin for a theatre, or one more convenient to fashionable quarters. It was also near many of the principal hotels, which was another advantage. The Messrs. Gunn proposed to give the legitimate English opera. No doubt the Italian operas were very admirable, and to those who were educated enough to understand them, charming; but, at the same time, they should recollect that there was a very large class whose tastes and means, perhaps, would not induce them to patronize the Italian opera, who wished for opportunities for hearing their own *native* composers.

The Attorney-General—I suppose by English operas you mean also to include the English versions of the Italian operas?

Serjeant Armstrong said he did, and so as that it could be enjoyed at a reasonable rate.

The Attorney-General—I am not sure that Mr. Harris has not attempted the English opera before, and that it was badly attended.

Mr. Harris—Most ruinously.

Serjeant Armstrong said that probably the great reason of that was where an audience became habituated to the Italian, they listened to no other opera within the same walls. There was a great deal in association. He thought the spirit of the times, too, was now in favour of the English opera.

The Solicitor-General—Will this new theatre be larger than the Queen's?

Mr. Joseph said it would not.

Serjeant Armstrong said it was not expected it would accommodate as many as the Queen's, but it would be of a very different style altogether.

The Solicitor-General thought it was not so much the size as the accommodation it would afford to the public they should look to.

Serjeant Armstrong assured the Solicitor-General that the comfort and convenience of the public was more the object of the Messrs. Gunn than the size. The prices for admission were also materially considered, and they proposed to have them 2s. 6d. for the boxes, 1s. for the pit, and 6d. for the gallery. He did not wish—and he had been instructed not to do so—to represent this project as a conflict with the other theatres. They had no desire to injure anyone. The only difficulty he found in this matter was to know what object there could be to oppose the grant of a patent, except the feelings on the part of the proprietors of the other theatres, that they would lose custom by it; but he thought they might as well suppose in a place the size of Dublin that a new hotel should be objected to on the same score. He had no doubt the opening of another theatre would have the effect of getting the owners of the present theatres to make better arrangements, particularly in the Queen's Theatre.

Mr. Joseph considered that it was not fair to refer to him, for Serjeant Armstrong was not aware of the arrangements he was making at the present moment.

Serjeant Armstrong said to make any injurious reflection would be against his own wishes and his instructions also, but at the same time he should say that the Queen's was capable of improvement. He would tell them why. In 1857, an application was made to the then attorney-general for a patent for a new theatre; he, in his judgment, stated that he would have granted it but for the promises of improvement, reformation, and enlargement made by the proprietor of the Queen's.

The Attorney-General said that the continuous series of refusals by one Attorney-General after another to grant a patent for a new theatre struck on his mind, although, of course, he did not regard it as any precedent.

The Solicitor-General—There is this to be said, that the last time the matter was only partly heard.

Serjeant Armstrong then mentioned the unsuitableness of the present theatres for amateur or garrison performances, and said that in London the population was 3,000,000, and there were 37 theatres and 47 music-halls. In Dublin they had nothing of the kind. In Liverpool the population was 443,000, and they had six theatres. In Edinburgh there were three theatres and two music-halls. In Bristol the population was 104,000, and they had two theatres and four music-halls. Newcastle-on-Tyne, three permanent theatres, and three music-halls. Scarborough, 18,000 of a population, three theatres and two music-halls. Portsmouth, three theatres and two music-halls; and Dublin, including Rathmines, with a population of 300,000, and they had only two theatres and no singing-halls.

The Solicitor-General asked was he right in saying that the Queen's Theatre could not play Shakespeare?

Mr. Joseph said it was generally imagined that no one but Mr. Harris could play the legitimate drama, but in England no one could decide what the legitimate drama was.

Solicitor-General—But isn't it the fact that in the Queen's Theatre at present no legitimate drama can be performed by law.

Mr. Harris—I don't think it can by law.

Mr. Joseph said it had never been decided.

Mr. Harris said it was not worth quarrelling about, for the legitimate drama did not draw, and it was melancholy that in the 38 theatres in London not one was capable of performing Shakespeare's plays.

The Attorney-General referred to the charter for the Queen's, by which it appeared they were not permitted to perform the legitimate drama.

The Solicitor-General said there were some things he would wish to be satisfied about. He would wish to have it clearly explained in evidence what the mode and facilities of access were to the new theatre, and whether, when the people went in by South King-street, would it be proposed they should go out some other way.

Serjeant Armstrong said the access from the pit would be *through the lane!*

The Solicitor-General said he would like to be satisfied about the comfort of the people who sat in what were called the "dress-boxes." He should say for himself that one thing that detracted from the "Royal"—and there was no more comfortable theatre in many other respects—was the discomfort of the "dress-boxes." You could not sit straight in them, and four people were crowded, with regard to the size, on the one row.

Serjeant Armstrong said the Messrs. Gunn were studying in all respects the convenience of the audience.

After some further observations the hearing of the application was postponed till after the Assizes.

ON ORNAMENTAL ART.*

It has been frequently observed by writers on the Fine Arts—poetry, painting, sculpture, architecture, and music—that the essence of art begins where utility ends; and, more especially, that the abstract quality of ornament is useless. This doctrine, however, is not only narrow, but utterly false. Pleasure is a mental want which the senses are fashioned to satisfy; and aught that produces that pleasure must be useful in the highest sense. Nature, in her useful creativeness, does not despise beauty of form and colour in producing unsparingly the things requisite for bodily wants; and art, in however low a degree, is but a reflex of nature; and its mission is to arouse, in her absence, kindred feelings to those excited in her presence. In a word, Nature is the mistress of Art; and it would ill become the latter to despise the means whereby the former works, even in ministering merely to our bodily wants. To cite a most homely instance—a room without ornament of any kind may be equally useful as one with ornament; but the latter, even in the absence of taste, will give more pleasure to its owner. So, instead of denouncing the inutility of ornamental art, I would plead for its usefulness in the highest sense. For of all the arts, however humble in degree, that of ornament has by far the most extensive influence in ministering to the pleasure of the senses. To every production of human ingenuity—from the stately edifice down to the meanest object in domestic use—its presence adds a charm, which, though to the mere utilitarian seemingly of no practical value, creates taste and refinement; and, moreover, in contributing practically to a nation's prosperity, promotes the cause of civilization.

The faculty of the mind which especially influences the character of ornamental art is taste—the possession of which is, with all deference to those who term it a natural instinct, wholly an acquirement. Now there is a prevailing error—and of old standing—that because some men prefer Greuze to Titian, Verdi to Beethoven, or Tupper to Tennyson, taste, therefore, is not to be disputed; and, moreover, that it has no fixed standard. But our prejudices, our likes and dislikes, must not be mistaken for Taste; and its fixed standard is the thorough appreciation of what is really true and beautiful. Moreover, as taste is wholly an acquirement, its presence betokens the mental health of its possessor; and proves, thoroughly, that the perceptive faculties have been accustomed to the presence of beauty, and have not been degraded by a continual association with deformity. But custom and ignorance vitiate taste.

Art has often been termed creative, but it can only be so in a very limited sense, inasmuch as it is utterly impossible to conceive or model any colour or form which is not to be found, partially or wholly, in Nature—the knowledge of whose works is the food of art. But though art is thus based especially on the reproduction of the form and colour which nature displays, it should—especially ornamental art—be rather suggestive than imitative; and, instead of copying the actual form and colour of Nature's works, the artist should be chiefly guided by the great motive on which Nature acts. That motive is fitness to the work to be done—so that, in all her works, there is neither redundancy nor poverty. The trunk of a tree, or the stem of a flower, is proportionate to the weight to be borne; and the minutest branch has the adequate power to support the leaves it puts forth. And this fitness is so perfect throughout as to make us almost feel that all living things—from a human being down to a blade of grass—are the growth of necessity, alone emanating from a Supreme Intelligence, which ministers, with boundless wealth, to the highest and meanest wants of the life it creates.

It is this fitness to the work to be done which shapes the productions of Nature, and gives birth to its boundless diversity of character in form and colour. From thence spring strength and delicacy, variety and simplicity, grace and beauty, and the quality of the work to be done affects the character of every object, and imparts to each such of the attributes I have named as are requisite to attain the end in view. In the human frame all these qualities are embodied in their utmost perfection, because the work of humanity is more universal than that of any other production in animal or vegetable life.

I have said that the characteristic features of Nature's works are strength, delicacy, variety, simplicity, grace, and beauty; and the ornamental or decorative artist, in his endeavours to impart any of those qualities to his work, must especially beware of the slightest exaggeration. The strength must be free from redundancy, and the delicacy from weakness; the variety must be void of eccentricity, and the simplicity void of monotony; the grace must be free from affectation, and the beauty from inanity. And the artist, in any path of art—but more especially in that of ornament—who can give to his work, in a proportionate degree, the qualities I have named, must be esteemed as possessing that perfection of taste which, in spite of fashion, will have its beneficial influence in the far future, if not in the near present.

Other qualities than those I have mentioned are necessary in the treatment of colour; but at present let us confine our attention simply to form. And, first, of strength and delicacy—in which Nature's works are so perfect, so well adapted to the fulfilment of the work to be done. Every branch of a tree and every stem of a flower, as I have already said, are constructed so as to bear the weight of the superincumbent matter, unless local causes affect their direction. Look, for instance, at the largest tree, and you will find that the branches springing from the trunk—and every smaller branch springing from them, up to the final twig—are gradually smaller in dimensions; and, without pretending to complete accuracy, I believe that the sum of the parts is on an equality with the bulk of the parent trunk. In metal work, I know it is perfectly possible to add a superstratum out of all proportion to the support. But the eye—the sense only engaged—has simply conception, in that matter, of bulk; and the mind revolts at seeing the larger form grow out of the lesser. In designing a candelabrum, for instance, how agreeable is the gradual diminution of bulk, not only in the branches, but even in the spiral foundation. If you compare those of Pompeian manufacture—which, generally, are graceful in the extreme—I think you will find more beauty and fitness too in those spiral stems which, however imperceptibly, decrease in bulk from the root—take the obelisk and column—than in those which are of the same thickness throughout. The latter impart a sense of fragility and insecurity ill adapted to the end in view, even on the mere score of utility. Now this redundancy is the point on which we chiefly err, and the error is not one only of bulk, but also of form; that is to say, the latter is often so obtrusive in detail that the eye fails to grasp the whole design. For though on investigating the parts of a design we are charmed by the presence of the most elaborate workmanship, yet if those parts, by being too obtrusive, weaken the impression of the whole, the work must be pronounced faulty in that most important quality in ornamental art—namely, proportion.

I have said, however, that although the strength should be free from redundancy, the delicacy should be equally free from weakness. Unfortunately, a middle course has little in it to excite the exuberant spirits of youth; so, whether the direction leans towards redundancy or weakness, it too often flies to extremes, repulsive to a more refined and experienced taste. I could point out modern examples in architecture by the hundred which err equally in opposite directions; and, with respect to the error of making large foundations for light superstructures, the erection of single columns to support statues which can never be seen is a sign of that bad taste of which ancient Rome, in its most prosperous times, showed such unmistakable evidence. So, returning to the candelabrum, I would warn the artist not to make the solidity of the foundation out of all proportion to the superstructure.

Again. I have observed that the variety should be void of eccentricity, and the simplicity free from monotony. Now the error which most prevails in all the intellectual arts, affecting equally the character of our amusements, is eccentricity; and the mind, ever seeking for something new, however untrue, is now, and always, I fear, will be, too ready to accept that quality as an evidence of genius. But the history of human error should teach us to beware of mere novelty; and the distrust of that superficial quality will ever increase in proportion as reason and experience influence the judgment. And this, possibly, is why people who have arrived at a certain age are often accused of being cynics for not immediately appreciating those things which excite the enthusiastic admiration of the young; whereas, this critical and sceptical spirit is more often the result of greater experience. Moreover, as the probability of the duration of life becomes more uncertain, we lose the desire of running after novelty in the hope of finding fresh delight—rather keeping to more established sources of pleasure. But it would be folly on this account to reject novelty, provided that it is a fresh application of principles which have hitherto influenced art, and not a mere deviation from established form. Nor in any art is eccentricity more certain to lead to errors of taste than in that of ornament—the materials being so abundant for eccentricity to turn to a perverse use. In the earliest stages of art—and, in a more confined degree, carried down to the very present day—it was the custom to unite features which do not naturally belong to the objects represented. So, to express the universality of human action, the heads of beasts and the wings of birds were freely added to the figure of man; but the conceit was poor, for the human face and figure are fully and solely capable of giving expression to the various attributes of man. Moreover, as regards the originality of the proceeding, it is of as poor invention as would be that of the artist who to the stem and leaves of a rose tree added the blossoms of the lily. With respect to the introduction of such animal forms in ornamental art, the practice has been, and is, so common and so time-honoured that I feel the greatest diffidence in uttering any objections; though I cannot but think that instead of putting a lion's paw or a bird's claw to represent the foot of a table, it would show more ingenuity and more taste in the artist if, acting under the principles that actuate nature, he could invent forms which should not be out of all keeping with the objects produced. At all events, I have no doubt on this point—that the combination of an angel's head and wings with a scrolled form which ends in a beast's claw is a ridiculous proceeding, eccentric, but not original, and utterly repugnant to sound taste.

As regards simplicity, and the necessity of avoiding monotony in the attempt to produce it, I have little to say; for though monotony is a prevailing error, yet simplicity in all our works and deeds is not a prevailing virtue. Even in dress and cookery—and as long as the eye and palate are so constituted as they have ever been, what pleases those senses must have its usefulness—we are wanting in simplicity, and exuberant in monotony.

If we turn to what is generally accepted as a higher art, namely architecture, we shall find there is a want of simplicity in its highest efforts, and an equal monotony in its lowest. In the former our architects seem impelled by the same desire as that which evidently excites two street bands in close proximity, and which strive for public attention by their loudness of appeal. The florid flares in juxtaposition to the simple style, and the whole produces confusion. If we compare those streets at home which are most renowned for their public buildings—such as Pall Mall—

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* From a paper read before the Associated Arts Institute. By Henry O'Neil, A.R.A.

with those of the same order in Paris and other continental cities, we cannot fail to be impressed by the latter, on account of the comparative uniformity of the architecture, though abounding in variety of ornament. Again, if we look at our streets of shops, or our miles of stuccoed villas, all, or most, of one pattern, we are so sick of the monotony of the latter, and of the want of some general motive in the former, that one feels half inclined to regret that every Englishman's house should be regarded as his own castle, and that he may deal with it, outwardly, according to individual prejudice, without any regard to general appearance. In what is termed purely ornamental art the same want of taste is seen in the form and colour of the furniture in our most lavishly decorated rooms. There we find jumbled together the utmost incongruity in form, and the greatest variety in colour; and, much as I uphold the charm of variety, I cannot but think the eye would be better pleased if chairs, carpets, curtains, table-covers, and walls were not so obtrusive and clashing in their effects. I have seen rooms wherein the objects I have named have various shades of one colour, without producing any monotonous effect; and so in form, though objecting to a thoroughly plain carpet, it is surely possible to gratify the eye by beauty of form and colour without going to an extreme, and offending taste by the introduction of fruit and flowers in profusion, which are not naturally produced on carpets and tables, and not made to tread on. Nay, even could you, by some process, produce a carpet which in form and colour should be literally like a blooming meadow, your skill would be thrown away, except to excite a smile of pity, or even contempt, at misdirected ingenuity.

We come now to the consideration of grace and beauty, which may be termed the elimination of the qualities I have named in Nature —separately or combined. For there are grace and beauty of strength, as well as of delicacy; of variety, as well as of simplicity; and though the fitness of Nature's works, in the ordinary meaning of utility, does not depend upon the presence of grace and beauty, yet, in the highest sense, they proclaim the usefulness of the work by the amount of mental pleasure they contribute. I have said that the grace must be free from affectation, and the beauty from inanity; and in support of my argument I can only refer you to those works of art which have been specially designed to develop those pleasure-giving qualities. Take a child by Reynolds, and one by Greuze; a Madonna by Raphael, and one by Carlo Dolce; a senator by Titian, and one by Kneller, or even Lely; these examples, without putting others before you, derived from poetry, sculpture, architecture, or music, will fully explain my meaning. And if I do not allude to Nature's works in support of my argument, it is because there are other means whereby Nature—for a good purpose we may be sure—appeals to our senses. For however pure may be our pleasure in contemplating beauty, yet there are other emotions which are not excited in its presence; but which, being distinctive of *human* nature, must have a beneficial influence, and are therefore worthy to be vivified by art. And this is the reason why I have ever strongly opposed that narrow doctrine which now especially prevails: that the aim of painting, sculpture, poetry, and music should be merely the excitement of the one pleasure aroused by the mere development of beauty. But ornamental art is single in its aim, and it cannot add its tribute to our ceaseless craving for pleasure by awakening terror or any other human passion, but must do so alone by the means of grace and beauty; and boundless indeed is the field wherein it works.

(To be continued.)

COMMUNICATION WITH FRANCE.

Mr. John Fowler, C.E., proposes continuous communication with France by means of large ferry-boats of 450 feet in length and proportionate breadth, drawing about twelve feet of water, and which from their size and form will be nearly free from all tossing and rolling in the heaviest Channel seas (?) It is objected (he says) that the weight of the train would make the boat topheavy, but this is a complete mistake. A train of passenger-carriages would only weigh about 120 tons, which in the proposed vessel of 7,000 tons would be practically unfelt. It is a common idea that it is proposed to place the passenger carriages on the deck, exposed to wind and weather, instead of their being inclosed, as they will be, in a space between the upper and main deck, and completely protected from exposure. It is also intended to carry the goods trucks below the main deck, as their weight will be useful to ballast the vessel and increase its steadiness. On the main deck accommodation will be provided for passengers (who will generally alight from their carriages, as they would at any railway station where a stoppage is made for refreshment), and they will find well-lighted, well-warmed saloons, with means of reading, writing, &c., which will make the sea voyage the more agreeable part of the journey. Private cabins will also be provided on the same deck, and large rooms for the officials of the Custom-Houses of the two countries, so that all luggage may be examined and the weary delay from that cause at the end of the journey entirely avoided. The speed of these steamers is an important part of their design; and instead of the journey from Dover to Audresselles occupying two hours, it will be performed in one. The hydraulic apparatus in the harbours on each side is arranged that the transfer of the carriages between the railway and the boats will be erected within five minutes. Such are the main features of the proposed boats. It now remains to find harbours for their accommodation. To the harbour which is designed at Dover no objection has been taken, except that its estimated cost may possibly be exceeded. The French harbour must, of course, depend upon the French Government, and the question whether they will choose a new port at Audresselles, or whether they will prefer either of the old ports of Calais or Boulogne, remains still for their decision. They are now engaged in a survey of the coast to ascertain which point is the most favourable for the purpose. The present time from the arrival at the port on either side to the time of departure of the train from the opposite side of the Channel is about three hours, and about half-an-hour is lost in the examination of luggage at the terminus. These three hours and a half will be reduced to one hour and a quarter by the superior speed of the boats employed, by the saving of the stoppages at the two ports, and by the Custom-House examination of baggage being performed on board the steamer, thus leaving the gain of two hours and a quarter.

A VILLA OF CONCRETE.

In a recent number of the *Builder* was given a woodcut illustration of Fernlands Villa, Chertsey, now nearly completed. "The concrete," says our esteemed contemporary, "of which it is built is composed of gravel and sand, dug on the spot, and Portland cement, in the proportion of 7 of gravel and sand to 1 of cement. Some portions, such as the terrace walls, are composed of 9½ of gravel to 1 of cement, and this latter proportion is found to make a good wall. Hoop iron is used in the walls as a tie. The apparatus employed in the construction is that patented and manufactured by Messrs. Drake, Brothers, and Reid, of London: it is easily adjusted to any shape or height of wall. The building consists of basement, ground-floor, and first and second storeys. The large central hall is continued up to the roof, with balcony round on first floor, and is lighted by a lantern, somewhat elaborately ornamented with carving, gilding, and stained glass. There are in all twenty-two rooms, besides conservatory, pantries, and larders. The pilasters (2 ft. on face by 3 in. projection), at each angle of the main building, and of the tower, were built up together with, and form a part of, the walls; and the walls are decreased in thickness on each floor, being 14 in., 12 in., and 10 in. The chimney-breasts, being large on the ground-floor (kitchen fireplace especially so), were reduced in size on the chamber floor, the adjustability of the apparatus allowing variations of this kind to be carried out at will. The pilasters to front doorway and shafts of the windows above it are of stone. The building is heated by air, warmed by contact with earthenware, conducted mainly through flues formed in the body of the concrete walls, and admitted by sliding valvular gratings in the skirtings of the several rooms. Ventilation is provided for in every room by distinct flues, formed in the concrete, and entered by apertures near the ceilings. The bells are Moseley's electric; and the closets are all of Moule's patent.

"The architect considers the construction perfectly successful, and it may be taken as a proof that concrete is a suitable material for buildings of any class or size. With the apparatus used, battering as well as perpendicular walls have been constructed, and we have every reason to believe that with due care and intelligence, and with good cement, walls of any shape, height, or inclination, can be successfully carried up in this material. Bad concrete is utterly worthless: with good concrete properly applied, sound and economical buildings may be constructed.

"The strength of the walls of this building was very satisfactorily demonstrated. During the construction it was determined to form a doorway in one of the inner walls. The concrete was cut away with a pickaxe to the required size, except in the middle, where a beam of concrete was left, 3 ft. 4 in. long, 9 in. deep, and 9 in. thick. This beam, a perfectly straight one, had along the middle of it one of the horizontal joints which necessarily occur between the layers of the concrete, but no bond of iron hooping. This beam was tested with a weight of 25 cwt., hung on its centre. After bearing the strain for twenty-four hours, the foreman jumped on it, but without effect, and it had after this to be demolished with a pickaxe. The architect is Mr. T. Wonnacott, of Chertsey. The cost of the building, when completed, will be about £4,000, including stables and coach-house."

BARRACK ACCOMMODATION.

It is not without considerable satisfaction that we find the subject of the construction of barracks at length exciting public attention, for it has been often a matter of surprise how so very unsatisfactory a state of things could have been allowed to have existed so long without any attempt having been made to render the soldier decently comfortable, or find for him a healthy habitation. It is no secret that most of the barracks in this country are in a most disgraceful state as regards sanitary considerations, and in a far less inefficient condition than those of any other nation in Europe, Russia excepted. The miserable accommodation afforded to the soldier has not been occasioned by any want of the attention of the military authorities having been called to the subject, but rather to a determination on the part of those in power to make the present old-fashioned and unhealthy buildings last as long as possible before erecting new ones, or incurring the requisite expenses for adapting them to modern requirements. . . . . . . So far as expense is concerned, the objections to cost in constructing healthy and commodious barracks may easily be met. No modern barrack has been erected at a less cost than £60 per man. Chelsea cost nearly £300 per man; while those at Chatham cost but £18 a man. Consequently, the inference naturally is, even after allowing for difference of cost for the same work between the present time and any former period, that convenient barracks, suitable for all reasonable purposes, could be built and fitted up for a very reasonable sum compared with what some barracks have cost. It will be remembered that Mr. Rawlinson, C.B., a most able and far-seeing man, who was Special Commissioner in the Crimea, expressed himself so thoroughly convinced of the suitableness of the private-apartment system for soldiers, that, in the year 1856, he submitted plans to the then Government embodying this most important principle. In these plans, it appears, there was a separate day-room and sleeping-room for every twelve men, the latter being divided by partitions, which gave to each a separate and private sleeping-place. Unfortunately, the scheme was not then received with much favour, and, like many other good schemes, was subsequently shelved. We trust, however, now that the plan has been again brought into notice under so able auspices as those of Dr. Stallard, that those in authority may be induced to treat the suggestion with more patience and consideration than has hitherto been shown. These are days of improvement, education, and economy.—*Broad Arrow.*

SLIGO TOWN HALL.

The building illustrated in our present number was commenced so far back as the year 1866, but owing to unforeseen circumstances the completion has been much delayed, although considerable progress has been made with the carcase of the structure, the exterior which we represent being entirely finished with the exception of the carving. At the outset, competition designs were invited, and in response some thirty sets of drawings were submitted. Sir John Benson's valuable professional aid was called into requisition in the selection of the most suitable design, and after minute investigation he pronounced in favour of that submitted by Mr. William Hague, F.R.I.A.I., of this city, recommending it for adoption as affording the most suitable and convenient arrangement of plan, coupled with the best architectural effect, and combined with moderate expense. The plans having been somewhat altered and modified from those submitted in competition, the building was finally contracted for at the sum of £6,863, including the clock tower. The stone used in the building is dark in colour, and the dressings are of lime and freestone, the latter obtained at Mount Charles, and contrasting in a pleasing manner with the colour of the masonry. The caps of shafts are of Portland stone for carving, as also the spandrils of window arches, &c. Contrast in the colour of materials used in construction has been availed of as much as possible in shafts, bands, strings, and voussoirs of arches, and with the best results, as the building is effective in appearance. Provision is made in the clock tower that the harbour master may look out into the bay, and the views obtained from it are exceedingly fine, commanding such an extensive range to sea and land. The plan comprehends on the ground floor a large reading-room and exchange, offices for town clerk and inspector of weights and measures, municipal council chamber, and borough court, with retiring and robing rooms, and large hall rising to the roof, lighted by a dome lantern, and containing the principal staircase. The upper floor consists of a public assembly or ball room, 75 ft. 6 in. by 38 ft., and 30 ft. high; committee and ante rooms, secretary and harbour master's offices, with ladies' and gentlemen's retiring-rooms in connection with the assembly-room. The basement is occupied by a large kitchen, with culinary offices attached; housekeeper's apartments, wine-cellar, boiler-room, and coal-vaults. Beneath the borough court is a night watch-room, with cells for male and female prisoners. On each floor there is ample lavatory and w.c. accommodation. The apartments where open grates are suitable are provided with fireplaces, and the larger or public rooms are to be heated as usual by hot-water, carried through pipes from the boiler in basement. The contractors for the whole are Messrs. Crowe, Brothers, of Great Brunswick-street; and so far as they have progressed, everything has been done in a creditable manner. The entire work is under the immediate control, and has been carried out under the personal superintendence of the architect, Mr. Hague.

ST. GEORGE'S CHURCH—ALTERATION OF PEWS.

A meeting of the parishioners of St. George's was held early in February, to take into consideration a proposal for alteration of the pewing. The pews as at present are of the old and inconvenient square form known as "family pews," and it is sought to convert them into the more modern and convenient long seats. Were the matter only a question of convenience and decency, there could be but one opinion as to the advisability of the change. Unfortunately, however, into this as into most things enters the very important consideration of expense, and although St. George's parish is one of the largest and most wealthy in Dublin, quite so much cannot be said of the congregation itself. Within the present generation several "free" churches have been erected in the parish, and to those most of the wealthy inhabitants of the parish have been attracted, perhaps by nothing more than by the superior comfort of their modern construction. The consequence naturally is, that although, as before mentioned, the parish is one of the wealthiest, the only influential parishioners who now take an interest in their parish church are those who hold private pews in connexion with the particular houses in which they reside, and those others who deem it a matter of duty and conscience to attend their parish church in preference to any other. The proposed alteration was objected to by some of the vestry (though apparently by only a minority) for various, and some rather amusing, reasons, which I shall mention afterwards. The only objection, however, which held was that of expense. The meeting, after some other motions had been amended, adopted, and withdrawn, ultimately resolved that the works should be carried out if the aid partly promised by the Church Commissioners were granted.

When compared with the old square pew, the longer and narrower one is quite a modern arrangement, but even the latter is now fast reaching the shelf and giving place to what cannot but be considered for various reasons an improvement—the open benches and handsome bench ends.

The alterations at present contemplated extend only, I believe, to the long pew, though, if practicable, the bench system would be eminently preferable. One circumstance, however, must be considered with regard to this, as it is in a degree peculiar to St. George's. When this church was erected (the parish not then having such a choice of places of worship) the congregation was much larger and more important, and no expense was spared in the construction of the sacred edifice. It is in this respect a building with which even Mr. Ruskin might be pleased, every detail being carefully worked out, and nothing glossed over or imperfectly done. The pewing is of splendid oak, in an excellent state of preservation, and it is of course sought to adapt this material to the construction of the new seats; and to whichever style of seat it can be best adapted, whether pew or bench, it should of course exercise considerable weight in favor of that style.

If the Commissioners grant the aid solicited, they will of course see that the work is carried out under proper architectural supervision, for anything more unpleasant than the appearance of patching in a church like this, where everything else is so well done, could scarcely be conceived. If, however, the aid sought from the Commissioners should be refused, and the alterations were to be carried out at the expense of the parishioners (and from the spirited offers of some of the gentlemen who feel an interest in the change there is little doubt they would be), still the money, though freely given, might not be so superabundant as to prevent dangerous ideas of economy entering into the matter, resulting perhaps in the estimate of a builder being adopted, who, forced to cut down rather low, may have recourse to plans and expedients, which to the professionally-uninstructed sense of his employers will appear all that is required, and there is little doubt he will prefer to cut down the work rather than his profits on it. It should be remembered by the parishioners that the alterations proposed are not altogether of the present but also for the future, and that a little extra stretch of their purses now may prove a saving as well as a gratification hereafter. The church will soon be required to in a measure support itself, and the greater the number of the congregation the easier will be the task. Bearing this in mind, let the parishioners subscribe as liberally as they can, so as to obtain the most approved changes, and above all things on proper plans and under proper supervision.

The just-mentioned change in church support leads to one of the arguments adduced by Dr. Bolland in a strenuous opposition to the proposed alterations. One of the reasons put forward in support of the movement is, to provide increased accommodation. Now, Dr. Bolland urges that the church, built many years ago, fully sufficed for the congregation (then three or four times greater than now), and expatiates on the folly of having more room, when for the congregation attending there is enough at present. This may at first sight seem fair enough, but when we remember that at the time the church was built the convenience of the modern sittings was unknown, and that the building in the parish of churches of more convenient construction, and the falling away of St. George's congregation, occurred at the same time, these members of it attending another church at greater expense, and at least not superior in any other particular; the conclusion naturally drawn will be exactly diverse to Dr. Bolland's wishes, and shew his deducements to rest on false hypotheses, and his logic to be weak. One other reason of his may cause some readers of this to smile—that St. George's Church being itself square on plan, the shape of the pews are not only in keeping, but so much so that any alteration would entirely destroy the beauty and conformity of the church. Surely a fine example of non-professional criticism! Another reason of his, and the best of those he adduced—indeed the only good one—was the difficulty of the conversion. The present materials, if ever so suitable and used with all economy, will still require to be supplemented with fresh; and it seems to be considered that fresh wood of the same quality is beyond the means of the parishioners to procure. This undoubtedly is a very serious objection, though it must not be considered insurmountable. The difference in the cost for wood similar to the existing for the quantity of new material required, will not in reality prove such an excess over the price of inferior wood; and if that really is impracticable, the present oak, judiciously arranged, and other wood carefully introduced, will produce a work of a by no means inferior grade.

When contemplating the proposed alterations, the parishioners should consider the comparative merits of the open and closed seats; and if the present material will work up as well, or nearly so, there can be but little question that the open seats carry the preference, and for many reasons. Conditions of beauty, elegance, convenience, and propriety all weigh in their favor; the nuisance of doors opening and closing during service is avoided, the church presents a greater appearance of freedom in its sittings, and greater scope is given to art to beautify them.

W. Black Law.

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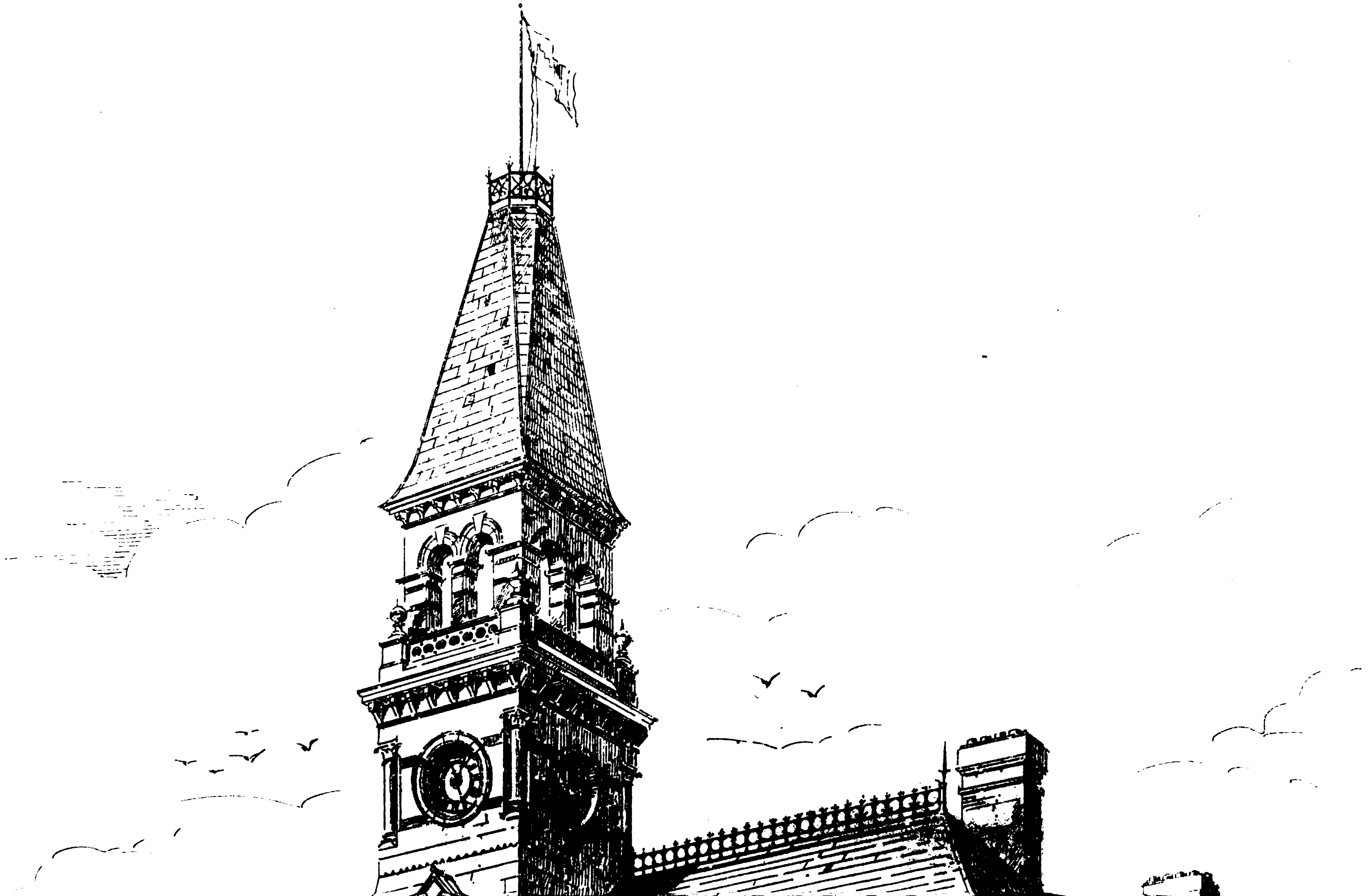

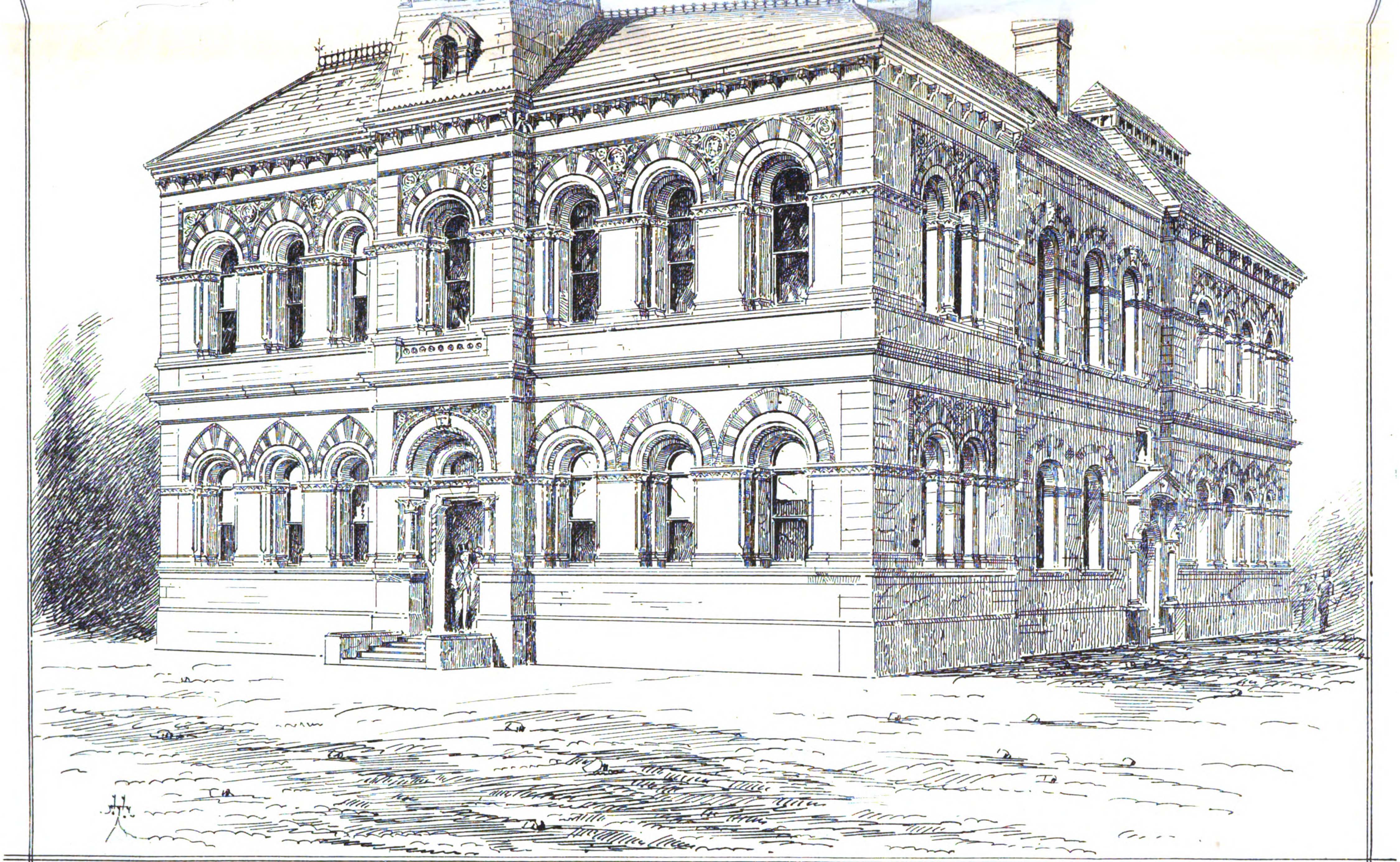

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UNIVERSITY OF ILLINOIS

"THE SEA AND ALL THAT THEREIN IS."

THE bottom of the sea is an enchanted country: the animals, its inhabitants, are self-luminous; they thunder upon their enemies from a distance; they harden themselves into stone. We read that Daphne was transformed into a laurel. The narrators of this fable have not depicted for us the sufferings of that unfortunate maiden, her langour, the growing numbness of her limbs, her feet dried up and spreading into long roots, her arms shaping into branches covered with a polished bark. But this dream is realised in the ocean every moment. There is no region with a favorable climate and an agreeable site, where animals are not found living in colonies, and working by their petrifactions at the construction of rocks and reefs of an immense extent. Heat favours their development. No part of the world presents them in the same marvellous variety as the Great Ocean and the Indian seas. If we direct our gaze into the liquid crystal of the Indan Ocean, we shall there see realised the most wonderful dreams and fairy tales of our childhood. Fantastic bushes bearing living flowers, the massive structure of the meandrina and astrea contrasting with the branching tufts of the explanaria, which blossom in the form of cups, with the madripordiæ of elegant structure and ever-varying ramifications. Everywhere throughout this region the eye is charmed with the brilliancy of colour; delicate shades of sea green alternating with browns and yellows, rich purple tints passing from the most vivid red to the deepest blue; nullipores, yellow or pink, delicately touched as the peach, covering decaying plants with a fresh development of life, and themselves enveloped with a black tissue of retipores resembling the most delicate carvings in ivory. Near by wave the yellow and lilac fans of the gorgona, worked like jewellery in filigree; strewn over the sandy bottom are thousands of sea-stars and sea-urchins of the most curious forms and varied colours. The flustra, the eschara, attached to branches of coral like mosses and lichens, and the patellidæ striped with yellow and purple, look like great cochineal insects on the ground. Then the sea-anemones, looking like immense cactus-flowers brilliant with the most glaring colours, adorn the clefts of the rocks with their waving crowns, or spread out their blooms, till the sea-bottom resembles a border of many-coloured ranunculuses; around the coral-bushes play the humming-birds of the ocean—brilliant little fishes, now sparkling with metallic red or blue, now with a golden green, or with the soft hue of silver. All this marvellous manifestation of life is displayed in the midst of the most rapid alternations of light and shade, changing with every breath, with every undulation that ripples the surface of the sea. When daylight declines, and the shadows of night spread in the deep waters, exquisite garden which they cover is lighted up with new splendours. The medusæ and the microscopic crustaceans shine in the darkness like fairy-stars. The pennatula, which during the day is of a reddish cinnabar colour, floats in a phosphorescent light: every corner of the sea-bottom send out its ray of colour; objects that look brown and dull in the universal radiation of daylight, now shine with the most charming green, yellow, and red light; and to complete the marvels of this enchanted night-scene, the large and silver disc of the moon of the sea (*Orthagoriscus mola*), commonly called the moon fish, moves softly through the whirling vortices of little stars. The most luxuriant vegetation of the tropics fails to develope so much wealth of form, and lags far behind the magnificent gardens of the ocean, composed almost entirely of animals, for variety and brilliance of colour. The marine fauna is not less remarkable for its extraordinary development than the abundant vegetation of the bed of the sea in the temperate zones. All that is beautiful, marvellous, or extraordinary in the great classes of fish, of echinodermata, of medusæ, of polypi, and of shell-covered molluscs bred in the warm and limpid waters of the tropical ocean, repose their on the white sands, attach themselves to the rough rocks, or (should the place they covet be already occupied) fasten like parasites on other existences as wonderful as themselves, or float on the surface and in the depths in the midst of a vegetation relatively rare."—*The Bottom of the Sea.* London, Sampson Low, and Son.

"IRISH LITERATURE."

UNDER the above heading, our venerable and highly-respected cotemporary, the *Athenæum*, gives place to statements, for the correctness of which we are not prepared to vouch. The veracity of its correspondent is, of course, at stake in the matter. The article alluded to commences by stating that

> "In spite of political excitement and the acts of violence which have been so shamefully common of late years" . . . . .

This, unfortunately for poor Ireland, is *too true.*

We are then furnished with a list of works about to be issued by Dublin publishers; this is succeeded by the following statement, which certainly demands some corroboration:—

> "A comparatively new enterprise is that of a new printing company, which began business in 1866, employing only three or four boys. They now employ about three hundred hands, and occupy an area of 22,356 square feet, and produce annually fifteen million sheets of printed matter, exclusive of newspapers. They print, bind, and publish; and in binding they have introduced fashions, such as coloured borders, that are common enough in London, but hitherto unknown in Ireland"

To the announcement immediately succeeding the above we can unhesitatingly give a direct contradiction, as we have ourselves produced works "*written, printed, bound, and illustrated* wholly *in Ireland* and by Irishmen"!!!

We may remark that the worthy head of the company alluded to has for several years spent a considerable portion of his well-earned gains as a merchant in the printing and dissemination of "leaflets" to and for "the million."

CONVERSAZIONE AT THE ROYAL DUBLIN SOCIETY.

THE arrangements for the Conversazione to be held on this evening are now complete. The following will be the principal attractions:—

In the Library.—A large number of microscopes and microscopic objects will be exhibited. Busts of distinguished persons, original studies and drawings of ancient ecclesiastical and military edifices of Ireland; a collection of drawings by Mr. G. V. Du Noyer; etchings and chromo lithographs. Photographic transparencies; photographs on opal glass, and enamel photography; photographs of distinguished persons, photographic albums; a volume bound in Irish oak, beautifully carved from designs; specimens of Belleek ware.

In the Lecture Theatre.—Mr. Simonton will exhibit a series of photographic transparencies and dissolving views of Irish, English, Scottish, German, French, Swiss, and Italian scenery. A pair of powerful lanterns will be used to project the views on to a large screen, and to show a fine photograph of the moon, taken with the great Melbourne telescope.

Mr. J. W. Robinson will exhibit, with the aid of the lime-light, the gradual development of the latent image on a photographic film.

Mr. Yeates will show some beautiful effects obtained by passing polarized light through crystals of minerals and through plates of unannealed glass. Mr. Yeates will also exhibit some striking electrical experiments with vacuum tubes and Gassiot's cascade.

A fine series of views of the opening of the Suez Canal, of Egypt, and Eastern scenery, of Rome, and of Pompeii, will be shown by Mr. Simonton on a very large scale. Photographs of statuary, taken from the best specimens of ancient and modern art, will be likewise exhibited.

In the upper hall of Museum.—On the gallery a lighthouse is fitted with great annular lens, used for revolving lights; and another, carrying a segment of cylindric refracting belt employed for beacons with fixed lights, exhibited with the permission of the Commissioners of Irish lights, by Mr. J. A. Wigham.

Electric light shown with large lens on gallery, a sectional model of a locomotive, specimens of iron and steel, curious steel turnings; an electro-motor engine, a large model locomotive, graphoscopes, stereoscopes, printing presses, &c.; model engines, steamers, &c.; a patent fret sawing machine in action, a collection of tools employed in fret cutting and carving, and specimens of work; an electric clock in action; a model of the great Melbourne telescope, gyroscopes, polariscopes, graphoscopes, stereoscopes, &c., musical boxes of various kinds, and objects of art; telegraphs, worked by pupils of the Queen's Institute; a set of metric weights and measures, a powerful electro magnet, &c.

IRISH PRODUCTIONS.

WHILST we have to lament the failure, though many and unforeseen causes, of several manufactures started in our country, we must feel proud that there are still undaunted adventurers who will risk some of their capital in almost untried speculations. Amongst those recently started we may mention a manufactory for producing "fluid annato," which has been commenced in Dublin by our worthy fellow-citizens, Messrs. M'Master, Hodgson, and Co. We are glad to learn that "the firm is sparing neither capital nor energy in introducing it not only in the butter districts of Ireland, but in the butter and cheese districts of England, France, the United States, and Canada." Another branch for the production of "condensed milk" is begun at Mallow by Mr. Newnham.

On this subject the *Grocer* says:—

> "This place has the advantage of being close to a main line of railway and in the heart of the valley of the Blackwater, one of the most luxurious grass districts of the Emerald Isle. Last summer he had completed a very substantial factory of stone brought from a distant quarry at great cost. The timber for the scaffolding, rafters, and floors was obtained under difficulties from a considerable distance, and had to be "worked up" on the spot, whilst in the labour department the erratic tendencies of the Irish workmen gave more delays and expenses. The machinery was constructed in London, and a department was added for manufacturing tins, and manned by experienced workmen; while a joiners' shop was established on the spot, with a saw mill worked by steam power. This department was for the purpose of making packing-cases. Arrangements were made by contract with the largest producers of milk in the surrounding districts, but the whole of the plans were not completed in time to take full advantage of last summer's supply; but while the supply of milk lasted, the factory was occupied in experimentalising. We are now informed that it is in full working order, and that at the commencement of the new season, the supply of condensed milk from this factory will be equal to the largest demand that can arise for it."

A TELEGRAPHIC CURIOSITY.—The *Bombay Times* publishes the following Reuter's message, which it received *via* Russia:—London, 17th, Alderman Salamon titary Salt baromds crawfords refused coranclay another agriblan assination ireland Correction butury Catholic Archbiship Armach."—21st.—"Days insurrection Volontry Bareclona refused Disarm Erectia baricehres totegul send awaire of severe fighting order restored Jestiff ffeary pallot Cornerised sonied."—"22nd,—letter popp Ruminery Illumining Contat Allap non—Catholics Anter Encommedial Concil for Discussion from already contend arbitary generally Chained houles fore times braves Suffies deproved with drawstoc to presented spot his Government saying excepted instructions and Washington Government disavowes proceedirm a Ormon King Portugal occepting thrown spirit abdicating favor Creditory prince Secretary Governor tarasend—assassinated republicean mob for attempting put down revolutinary flows back hole Cambreisn discute rumoured large withdrawl tomorrow Shealy telegraphed Washington Spain revolved not unjociate for Solei Empereur Napoleon have given audience to Lord Clarendon prince prussian Cowing Constantinople afterheitir seuz brachop excited." Failing to decipher this despatch, the *Bombay Times* prints it for the information of its readers.—*Newspaper Press.*

SOME REVELATIONS OF MODERN SCIENCE.

Under the above title an interesting lecture was read on Tuesday week before the Drogheda Young Men's Association, by Dr. Edmond Nugent.

After some opening remarks in reference to the benefits reaped by the world from scientific labour, the lecturer proceeded :—I do not see why scientific education should not be given in our schools, if it were only for assisting to develop the powers of reason and observation, as well as to give a proper tone to the mental faculties. Such subjects as experimental mechanics, natural philosophy, electricity, chemistry, and physiology might easily be taught, and some of them are now indispensably necessary for many men seeking appointments in either military or civil services. No opportunity should be lost of making boys acquainted with machinery, from the common crane and water-mill of our daily walks to the steam-engine and spinning-jenny of the factory. Those who have not examined engines at work will never understand them clearly, or be able to describe them. To scientific research is due the great improvement in farming machines and implements, and it is now found that the farm labourer—by no means so stupid as was formerly supposed—is quite capable of managing the various agricultural machines now in use; and nearly all farmers now know that, no matter how plants may differ in appearance and properties, they have a common character, and owe their formation to certain elements which suffice for their requirements, just as the letters of the alphabet suffice for the requirements of writing and printing, and their sons at school will learn that the most important of these plant-forming elements are carbon, hydrogen, oxygen, nitrogen, phosphorus, sulphur, chlorine, silicon, calcium, magnesium, potassium, sodium, and iron. We hear a great deal lately of higher education for women, and scientific lectures of various kinds are now being given to ladies in London, Edinburgh, Manchester, Glasgow, and other towns, Dublin not excepted. What may be the cause for this novel and sudden demand of the ladies for a higher kind of intellectual culture is not for me to say. I only trust it is not merely for the novelty of the thing, and the liking to do as they see other people doing. Thorough teaching, and not entertainment, will, I hope, be given by the lecturers and sought after by the students; for if lectures are only attended through wanting something else to do, they would be better not attended at all. The results of the deep-sea dredging explorations carried out last year under the direction of Dr. Carpenter, Professor Thomson, and Mr. Jeffreys in the "Porcupine," a vessel fitted out and given by Government expressly for that purpose, must no doubt be classed among the most important which have of late years been brought before the scientific world. It is now beyond dispute that the deepest portions of the ocean-bed can be explored, and we have conclusive proof of the existence of warm and cold areas of the bottom of the deep-sea, lying close to each other, and each inhabited by its distinct and characteristic *fauna*; but not the slightest trace of vegetable organisms could be found beyond the depth of fifteen fathoms. Physiology is daily increasing in importance as an element of liberal culture, no less than a distinct branch of science. Great progress has also been made in chemistry. The restless curiosity of the human mind led to the discovery of the telescope, by which man pierces the mysterious and illimitable space above us, and reveals great and wonderful worlds lost to his unaided eye. By the spectroscope we can plainly see the various colours which make up white light, and by it the red prominences round the sun can now be examined any day, without waiting for an eclipse to occur. The rhythmic beatings of the heart can be now shown to an audience by the cardiscope. The laryngoscope enables us to see the interior of the windpipe and the vocal apparatus, in the same manner as the opthalmoscope enables us to see the inmost parts and structures of the eye, and by the sphygmograph we can make a tracing of the beatings of the pulse. Microscopical observers can tell us how we breathe fragments of each other's clothes, the scurf-skin of each other's hands and faces, and other matters introduced into the room by the listeners, or carried in through the window, and if a "whiff" of air from a sewer enters the room living "vibrios," as they are called, will also be found; and these are the ways in which scarlatina and other diseases are spread. Modern science tells us, not only of the properties of impure air, but also of the use of the several popular practices, such as lighting fires to purify the air during epidemics, the use of gauze curtains in malarious districts as a protection against fever, covering the mouth during sleep in fever countries, &c. We now know that heat more or less purifies air, and that it can be deprived of the suspended particles of impurity by filtering. It is also a well-known fact that miasma cannot cross water, and this is why the Admiralty will not allow their men to sleep ashore in malarious districts, and when they are up rivers in their boats the crews are made to sleep in the boats, anchored off the shore. No labour we can undertake is more severe than that of the muscles during a boat-race, and still this is only three-fourths of the labour exerted night and day by each of our hearts. The average weight of the human heart, in a middle-aged, healthy man, is about 9½ oz., and such a heart would in one day do work equal to raising 124 tons one foot high. This has been proved lately by Professor Haughton, of Dublin, and this exceeds the work done by the muscles in a boat-race in the proportion of 20 to 15. When the railway was made between Trieste and Vienna a prize was offered for the locomotive Alp engine which could lift its own weight the greatest height in one hour. The prize engine was the "Bavaria," which could lift herself 2,700 ft. in one hour, the greatest feat yet accomplished on steep gradients, and this is only one-eighth part of the heart's power—the height the heart could lift its own weight in one hour being 19,754 ft. Therefore we regard the heart as the most wonderful piece of mechanism known. Its energy equals one-third of the entire force of all the muscles of a strong man, and it is eight times the force of the most powerful engine yet invented by man. The manifold and various uses and advantages of the chief instrument to which I will allude this evening are more than I could attempt to enumerate. It was but a few years ago looked on as a costly toy, but now it is acknowledged to be the inseparable companion of every man of science. By it we gain some knowledge of all parts of creation, and fill our minds with additional reverence and admiration for the beneficent and Almighty Creator to whom "the earth belongs, and the fulness thereof, the world and they that dwell therein." In the medical world its utility and necessity are fully appreciated, as it contributes most effectually to the alleviation of those various and multiplied "ills which flesh is heir to." The smallest portion of diseased matter, when placed under the microscope, tells more in one minute to the experienced eye than could be gained in many days by any other method. In chemistry it enables us to discover most minutely the changes of form and colour caused by test fluids on solids. By it we can detect the invisible ingredients which adulterate our food, our drink, and our medicines. It tells us that the blood which stains the murderer is that of his fellow-man, and not that of other life which he pretends to have taken, and in witness against the criminal it appealed on one occasion to the very sand he walked on at midnight. Shells can be measured to the thousandth part of an inch, and it has been found by means of the microscope that in certain Bohemian "schists" there are fifty-one millions of animalcules to the cubic inch, each skeleton weighing no more than the two-hundred-millionth of a grain. By its means we can see the utility of the busy multitudinous animal life to the health, comfort, and preservation of human kind, and the unbounded love of God in his secret provisions for the unceasing changes of matter. Slates, flints, sandstones, tracts of country, chains of mountains, sandbanks in the ocean, are all proved to be immense masses of shells of invisible animals. After explaining the mechanical construction of microscopes in general, the lecturer proceeded to exhibit several interesting objects with an oxy-hydrogen microscope, in illustration of his lecture.

ROUGET'S FIXATIVE PROCESS.

In the month of March of last year Professor Rouget, one of the Masters in the Government Schools of Paris, made a discovery, which in its effects will be invaluable to artists and the art world in general; indeed, it appears to us that this useful invention requires only to be known to be at once fully appreciated, and we gladly take this opportunity of mentioning it to our various readers. It is a rapid and apparently perfectly safe method of fixing chalk, charcoal, crayon or pencil drawings, by means of a particular fluid blown through a glass syphon in the form of a fine spray, on to the material to be fixed. The paper on which the drawing is made is not injured by the fluid; on the contrary, it is preserved by it—it fact, one of the great uses of this fixative process is supposed to be the preserving of the paper and colour of water-colour or other drawings from decay. The apparatus is in itself of a very simple character, a child might learn to use it, and it is likewise very portable. The process has been warmly taken up by many distinguished French painters, architects, and draughtsmen; amongst others we may mention Gerome, Cabanel, Villems, Gleyre, Viollet-le-Duc, and Gustave Doré; it has also been used by some well-known artists in this country, and they have expressed themselves well satisfied with the results. It was tried this summer on a crayon sketch of a sunset, and the glowing colours were not in the least injured. This is an example of the undoubted benefit of this process to the painter, for with its aid he may rapidly draw in sunset effects, with that most rapid of mediums, coloured crayons, and keep them by him as studies for ever, as bright and uninjured as when first executed. There is another agreeable quality in this process: when the drawing has been fixed, it is quite easy to work upon it again and again, providing only that the parts worked upon be finally blown over with the spray when the drawing is quite finished. Architects will find this apparatus most useful in fixing their rough pencil sketches and more elaborate drawings of architectural details.—*Building News.*

CITY IMPROVEMENTS.

We are glad to find that at length the authorities of Trinity College and the Corporation are likely to unite in carrying out the long-looked-for improvements in College-green and College-street, by the removal of the old railings and base in front of the College and the dingy wall that has so long disfigured College-street, and erecting instead handsome new base walls and railings. The College authorities agree to give up 12 ft. in the centre of the College-green railings to the city, and 2 ft. 6 in. the extreme corners. The line in College-green to be a gentle give-and-take curve from the corner opposite the Bank of Ireland to the stone pier near the entrance to Clarendon's establishment. We understand that the Bank of Ireland has subscribed liberally to the undertaking, but we regret to hear that the Provincial Bank, which will benefit most by the improvement, declines subscribing towards it. The College authorities bear half the whole cost of the undertaking, and certainly deserve credit for the liberal spirit in which they have met the city authorities. The designs have been prepared by Mr. M'Curdy.

THE ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND.

THE ordinary general meeting of the Institute was held at their rooms, Great Brunswick-street, on Thursday evening, the 17th ult.

Mr. JAMES H. OWEN, President, in the Chair.

Sir William R. Wilde made a most interesting communication on "The Archæological Drawings and Notes of Gabriel Beranger, referring to ancient buildings in Ireland (and in Dublin more especially) as existing in 1760-80;" and exhibited several hundred beautiful water-colour drawings, with descriptive manuscript notes and antiquarian remarks made by that celebrated and hitherto but little noticed author. Sir William commenced by giving a short biographical sketch of Beranger, who belonged to one of the Huguenot families expelled from France at the time of the revocation of the Edict of Nantes, and which divided into three sections. One of these settled in Ireland, and subsequently had an artists' warehouse at 6, South Great George's-street, in this city. Another branch of the family resided in England, where it is said that Laurence Sterne, the sentimentalist, was engaged to a lady of that family, who, it is related by the Elder D'Israeli, afterwards became deranged, and formed the subject of Sterne's "Maria." The third branch settled at Rotterdam, and, about the year 1750, in order to join the families, Gabriel Beranger, then a young artist, came to Ireland to marry his cousin in George's-street. During the next thirty years, Beranger appears to have occupied himself entirely as an antiquarian, draughtsman, and writer, and certainly made the largest and most beautiful collection of drawings of which any account has come down to the present day, as having emanated from the pencil of a resident artist in the eighteenth century. Besides the drawings, both large and small, which he made of old castles, churches, round towers, and other objects of architectural antiquity, he drew most of the illustrations of antiquities of gold and bronze, &c., which were published (without acknowledgment) in Vallancy's "Collectanea." He was also a flower painter of great accuracy and grace, and likewise drew birds with most perfect ornithological skill and exactness. The lecturer exhibited a great many beautiful specimens illustrative of each of the foregoing special departments of art, and likewise exhibited the works, both paintings and manuscripts, which Beranger had evidently prepared for publication. Like our distinguished countryman, the late Dr. Petrie, he was first an artist, and, taking delight in drawing the ancient military and ecclesiastical remains of his adopted country, he soon became interested in their history, and thus passed naturally and successively into the antiquary and historian. Although a foreigner, he wrote English grammatically, and seemed to appreciate Irish wit and enjoy Irish fun as much as one of ourselves. He was somewhat of a gourmand, and not only relished a good dinner, but was well acquainted with natural history; and, among other instances of his accomplishments, has left on record some notices of the Irish lamprey, and gave a description and furnished a drawing of the celebrated gizzard of the gallaroo trout, long before it had been described by English naturalists. Beranger's artistic and descriptive powers becoming known to a society of antiquaries then forming in the Royal Dublin Society, and of which Colonel Burton (afterwards Viscount Conyngham), Col. Vallancy, and other eminent men of the period were directors, he was, in company with Signor Bigari, an eminent Italian architect and fresco painter, sent on a tour from Dublin through the counties of Meath, Cavan, Fermanagh, Sligo, Mayo, Galway, Roscommon, and afterwards to Wicklow and other parts of the country. Sir William exhibited the large illustrated manuscript book descriptive of the tour, which to the artists was almost like a royal progress; noblemen, gentlemen, and the clergy of all persuasions receiving them with unbounded hospitality, and often accompanying them in their rambles in search of cromlechs, castles, churches, and ancient graves. It was the intention of the Antiquarian Society, which existed long before the Royal Irish Academy, to publish these drawings; but, with the exception of a few that appeared in the magazines of the period, and those relating to Glendalough, which Dr. Petrie published in his work on the Round Towers, Beranger's labours appear to have been altogether overlooked during the last eighty or ninty years. What makes this collection now so valuable is, that many of the ruins drawn by Beranger a century ago—for example, Baggotrath Castle, adjoining Pembroke-street; the Round Tower of Dublin, which formerly stood in Ship-street, and the Castles of Rathgar and Cullen's Wood, and many others in different parts of the country —are either altogether wanting or now in a most ruinous condition. Sir William likewise exhibited a crayon drawing of Beranger, taken by the artist himself in early life. He also stated that his chief object in then bringing forward this communication was in order to elicit information on the subject of Beranger's labours, and that he was about to publish a detailed memoir of him in that grand *repertoire* of Irish archæology, the "Journal of the Royal Historical and Archæological Association of Ireland." In conclusion, he made some observations upon the subject of the Round Towers generally, and that of Dublin in particular, and expressed his obligations for various materials to Mr. E. Clarke, Mrs. Walker, the Rev. J. C. Walker, and Dr. Sharkey, of Ballinasloe; J. Huband Smith, Esq.; Dr. Beatty, and other friends who had largely assisted him in lending materials for this memoir. He hoped that this communication would be the means of still further elucidating the history of the second half of the last century.

The Very Rev. Canon Pope spoke in high terms of the gratification which the observations of Sir William Wilde had given him, and expressed a hope that some persons would do for the great artists who lived in the middle of the past century what Sir Wm. Wilde had done for Gabriel Beranger. The rev. gentleman enumerated a great many engravers and sculptors, who resided in Dublin at the period in which Beranger lived, and concluded by moving a vote of thanks to Sir William Wilde for his most valuable and interesting communication.

Mr. Parke Neville, C.E., seconded the resolution, which was put from the chair and carried amidst applause.

Sir William Wilde returned thanks in suitable terms.

On the motion of Mr. J. Rawson Carroll, another evening was named for the further consideration by the members of the Institute of the most valuable and interesting communication of Sir William Wilde.

[We were happy to find that the circular, which was largely circulated by the Council of the Institute, had the effect of bringing together a goodly number of those interested in the study of Irish antiquarian subjects. The long-debated question as to the purposes for which the Round Towers were built will be resumed, and probably form the topic for one or two more of the "Institute" meetings.]

THE NEW PREMISES OF THE LAW CLUB OF IRELAND.

THE new dwelling for the Law Club—one of the oldest in our city—has been completed and occupied. It is situated in a central and convenient position on the south side of Nassau-street, close to its junction with Grafton-street. The street elevation is Gothic in its character, freely treated, and consists of four storeys, marked externally by moulded and carved string-courses. The second floor is divided into six bays, spanned by segmental pointed arches, surbased. The division forming the entrance to the club-house is distinguished by a projecting porch, flanked on each side by polished Connemara marble shafts, with carved capitals and bases. The two oriels on the first floor (belonging respectively to the coffee-room and reading-room) form a striking feature on the façade, and afford an admirable prospect over the College grounds. These oriels are carried on carved stone corbelling springing from ground-floor arches, and consist each of two lights, divided and flanked by polished Peterhead granite columns, with carved capitals and bases. The pedestals are pierced by foiled circular openings, and the whole is covered by a hipped roof of ornamental red roofing tiles laid in patterns. The tier of windows on the next storey is very similar to those just mentioned, but proportionately smaller. The top floor, which is an attic, is divided externally from the work below by a bold and effective cornice, and is lighted by large dormer windows, the centre—a triplet—with a single pointed arch, spanning the whole; the gable above, carried up at a steep pitch, forming a prominent feature in its composition. It is surrounded by a stone terminal ornament forming a shield, the tympanum below being filled in with arched niches. The roof is of high pitch, and covered with princess slating, the whole being crowned by an elaborate metal cresting, having standards at intervals, richly gilt. The internal arrangements have been planned with great skill, and the utmost extent of accommodation has been obtained. The entrance-hall, which is enclosed by a handsome glazed screen in polished pitch pine, leads to the stairs, on the first landing of which is placed the bar, with lift and manager's room in juxta-position. A short flight of steps leads to the billiard-room, a well-proportioned and well-ventilated apartment, lighted from the roof. The billiard-room is finished with all the necessary fittings, including a first-class billiard-table, by Harris, On the first floor is situated the coffee-room, an admirably-proportioned apartment 37 ft. by 24 ft., furnished with great elegance and good taste. The reading-room and strangers'-room are also on this floor, the whole suite being 14 ft. in height. The second floor contains the strangers'-room, committee and smoking-rooms and members' bed-rooms, also bath and dressing-rooms, with all necessary conveniences. The kitchen and the numerous offices in connection therewith are in the basement, which is roomy, ventilated, and well lighted. A large lift works from the top to the bottom of the house, for the conveyance of coal, &c., and doors are fixed at each stage. Lavatories and all other conveniences are provided throughout the house, and ladders of wrought-iron are fixed against the outer walls to facilitate escape in the event of fire. The internal decorations have been most successfully carried out by Mr. James Gibson, of Mary-street. The architect to the building is Mr. John M'Curdy, of Leinster-street; and the superintending architect on behalf of the club was Mr. W. M. Mitchell, of Suffolk-street. The works have been executed in a highly creditable manner by Mr. John Nolan, Meredyth-place.

RESTORATION OF SUMMERHILL HOUSE, CO. MEATH,

THE SEAT OF LORD LANGFORD.

THE restorations of this palatial residence, which (together with Dangan Castle, the birthplace of the "Great Duke") was burned by the rebels in 1798, have just been commenced. Any works (the roof excepted) that have been done to this building since the date of its destruction have been merely of a temporary character. The present Lord Langford has decided on restoring the whole edifice to its original state, and for this purpose has obtained designs from Mr. M'Curdy. The building works have been placed in the hands of Mr. Bolton; the plumber's works have been undertaken by Messrs. Ross and Co., and Messrs. Hodges are to supply the works in connexion with the cooking and culinary department.

MR. MACLISE'S MASTERPIECES.[*]

A RECENT visit to the Royal Gallery, in the Houses of Parliament, gave us cause to lament the too obvious deterioration of Mr. Maclise's picture in that chamber, 'The Interview between Wellington and Blucher after Waterloo.' The whole of this work is now covered with what may aptly be compared to a glassy or semi-transparent mildew. We know no better term for this purpose than "mildew," although the word but ill applies to the look of the painting; painters will recognize our meaning if we say that the picture is obscured by a "chill" such as accrues to indifferent or badly-employed varnish when applied to an oil-painting. This is more strongly marked on some portions of the surface of this picture than on others. The faces of two Irishmen, who lie wounded on the ground, and cheer the Generals whose meeting is the subject of the work, are so deeply marred that their expressions are obscured; in other places the defect is but slightly distinguishable, although it is constant and sadly injurious to the great work. By examination as complete as want of a scaffolding permits, we are convinced that this appearance is superficial, and could be removed without injury to the pigments, and therefore without injury to the picture. We discovered nothing like fading or discoloration of the pigments, and neither exfoliation nor crumbling nor cracking of the surface is observable by one who stands on the floor of the Royal Gallery, but everywhere obscuration, which may be due to the coming to the surface of a semi-opaque medium, such as the solution of silica, which is employed in stereochromo painting. We have reason to believe that superabundance of this medium was inadvertently employed in "fixing" the colours after Mr. Maclise had finished his work. We do not pretend to say that the present state of this masterpiece is due to such an error; neither does it seem easy to show how a solution of silica, once absorbed by and solidified in the plaster on which this picture was wrought, could come to the surface again and obscure the whole. Yet we know that the result of applying superabundance of a silicious solution to a painted surface produces a dim, glassy film, which is identical in appearance with that "mildew" which obscures the picture. It seems beyond question that the film is on the surface; if so, it may easily be dissolved off the wall, so that the painting may recover its brilliancy. There is nothing new in this defect beyond its having gradually spread during the last seven years. Before the artist had finished the picture small parts presented the same appearance, which was attributed to the application of an excess of silica. The painting by Mr. Maclise, which fills the panel of the wall of the Royal Gallery opposite to that of 'The Interview of Wellington and Blucher,' and represents 'The Death of Nelson,' seems intact, except where, on the black hat of the Admiral, which lies immediately in the foreground and in the middle of the panel, a few fresh marks are observable; but we do not know that they are identified with the dimness of the companion work.

MESSRS. MARTIN AND SON'S TIMBER SALES.

A VERY important sale of wood goods was held on Tuesday last at the stores of Messrs. Martin and Son, the enterprising ship owners and timber importers, North Wall. The sale was attended by a large and respectable company, representing the city and country consumers. The bidding was lively throughout. Large quantities of St. John and Lower Port spruce deals, American red and white pine were moved off, with some lots of superior board timber and oak, the latter being large and very fine. The prices ranged as follows:—White pine, large logs, 55s. to 60s.; oak, very large, 65s. to 85s. do; Quebec red pine, 55s. to 62s. 6d. do; Quebec spruce deals, £13 5s. to £15 15s. per hundred; St. John deals £11 10s. to £13 10s. do.; lower port spruce deals, £11 to £12 do.; pine deals, second quality, £23; third quality £19.

There was keen competition for the American square timber, particularly the red and white pine, both of which were very fine indeed, and of a class very scarce in this market at present.

The manner in which the sale was conducted gave great satisfaction to all present, and we perceive it is to be continued on Thursday next, the 3rd March.

Messrs. Martin and Son, who have for so many years expended such large sums of money in our city, and have done so much to improve the trade of this port and the country generally, are well deserving the warmest support of their fellow-citizens, and this we hope will be shown them on Thursday next, by every member of the wood trade.

MISCELLANEOUS.

A site for the statue of the late Earl of Carlisle has been marked out in the "People's Park," Phœnix Park.

PINCHBECK'S TRACTION ENGINE.—The want of an inexpensive locomotive for the purpose of traction on mineral lines has long been felt, and to meet this want, Mr. John Pinchbeck, engineer, of Leadenhall-street, London, has designed and constructed an engine. The speed at which is intended to work is about four miles per hour, drawing a gross load of from twenty to twenty-five tons up an incline of one in twenty for a length of three miles. No gear chains or other complications are employed in connecting the driving wheels. The cost does not exceed that of a road traction engine. We give a few of the principal dimensions. First, as regards the boiler, the barrel is 3 ft. diameter, 6 ft. 8 in. long, the fire-box being flush with it; the plates of the barrel ⅜ in. thick, the flange plates, 7-16 in., and the tube plates ⅝ in.; the fire-box plates are strongly stayed, and are of Lowmoor iron. The boiler contains fifty-three tubes, 2¼ in. outside diameter, the heating surface being 250 square feet; the grate surface 5·2 square feet. As regards the engine, it consists of a cylinder 10 in. diameter, 12 in. stroke, placed on the smoke-box end, so that when ascending steep inclines the danger and loss of power consequent on priming is avoided. It is fitted with two speeds, one of about two and a-half miles per hour, the other about five miles. This arrangement has the advantage of enabling a comparatively small engine to accomplish a large amount of work. The piston in either case seldom runs at less than the very moderate velocity of between 300 ft. and 400 feet per minute. The great disadvantage of the ordinary contractors' engine is that the speed of the piston when ascending steep inclines is very materially reduced, in some cases not exceeding 100 ft. per minute, at which speed the power of the boiler cannot be fully developed, and therefore it is necessary to have a large and expensive kind of machine to do the same amount of work as is effected by Mr. Pinchbeck's engine.

GIVING A CHARACTER.—A gentleman in Mayence gave his servant maid the following "character" the other day:—The bearer has been in my house a year—*minus* eleven months. During that time she has shown herself diligent—at the house-door; frugal—in work; mindful—of herself; prompt—in excuses; friendly—towards men; faithful—to her lovers; and honest—when everything had vanished." We have no doubt the services of this attractive creature have been in immense request wherever she has exhibited her wonderful certificate.

A CAUTION.—It ought to be pretty well known by this time that the copyright of Mr. Maclise's grand pictures, "Wellington" and "Nelson," in the Royal Gallery, at the Houses of Parliament, was purchased by the Art-Union of London, and that engravings are in course of active preparation for distribution. It takes a long time, however, to make such facts known, even in circles supposed to be well informed on such points. Thus Messrs. Ward & Lock had reproduced for publication, as a chromolithograph, the centre portion of the Wellington picture, and were about to publish it. On receiving notice, however, from the Hon. Solicitor of the Art-Union that the Society would maintain its rights, those gentlemen at once expressed regret for having unwittingly done wrong, and forwarded all the impressions, some 3,500 in number, to be destroyed. Great credit is due to Messrs. Ward & Lock for their prompt acknowledgment of error. We mention the occurrence simply as a caution to other publishers.—*Builder.*

THE HEALTH OF DUBLIN.—In the Dublin registration district the births registered during the week ending February 19th, amounted to 171. The average number in the corresponding week of the years 1864 to '69 inclusive, was 176. The deaths registered during the week were 161. The average number in the corresponding week of the previous six years was 177. Eight deaths were caused by fever, viz., 3 by typhus, 2 by typhoid or enteric fever, and 3 by simple continued fever. Scarlet fever proved fatal in one instance. Two deaths resulted from whooping cough, 3 from croup, and 5 from measles. Nine children were carried off by convulsions. Bronchitis was the cause of 42 deaths. Two deaths were referred to paralysis, and 1 to epilepsy. Diseases of the heart caused 1 death, and pericarditis or inflammation of the heart's covering, 1. Phthisis or pulmonary consumption killed 25 persons, mesenteric disease 3, hydrocephalus or water on the brain 3, and scrofula 2. Of the deaths registered during the week, 17 were ascribed to old age, including that of a lady who (as stated) had attained the age of 90 years.

THE PIPE-LAYING CAT.—The pretty tale is well known of a prisonor who made a spider's web serve to draw up a fine thread, the thread a string, and the string a rope strong enough for him to escape by. We have just now heard a little story of a cute young Yankee in Lisbon, Ct., which may go with this. He wanted to lay a water-pipe through a drain several feet below the surface without digging up the drain; so what did he but tie a string to a cat's leg, thrust her into one end of the drain, and gave a terrific "S'cat!" The feline creature, thus made a cat's-paw, and dreading a catastrophe or cataclysm, quickly rushed through the other end, as if from a catapult or cataract. The pipe was drawn through by means of the string, and 10 dollars were saved by the transaction;—a categorical result entitling this cat of the catacomb to be included in the next catalogue of labour-saving machines.—*Builder.*

MODERN INVENTIONS.—That great invention the "Chronograph," which times all the principal events of the day, and has revolutionized and superseded the clumsy old-fashioned "Stop-watch," seems likely to be eclipsed in fame by that still greater and more useful invention the "Keyless Watch." The fact of no key being required renders these Watches indispensable to the traveller, the nervous, and invalids. The enormous number sent even by post to all parts of the world, is a convincing proof of their great utility. The prices at which they are sold range from 5 to 100 guineas. Thousands of them are manufactured by Mr. J. W. BENSON, of Old Bond-street, and of the Steam Factory, Ludgate-hill, London, who sends post free for 2d. a most interesting historical pamphlet upon watch making.

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ILLUSTRATION:
SLIGO TOWN HALL.

NOTICE.

We shall feel obliged to our friends for notes of works, &c., in contemplation or in progress, in the provinces or elsewhere.

The Proprietor of the IRISH BUILDER *requests that all parties who have been furnished with accounts from the office will send the amounts of same immediately.*

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[*] From the *Athenæum.*

The Irish Builder.

VOL. XI.—No. 246.

Early use of Concrete in Ireland.

FROM none of the writers on the Round Towers of Ireland have we been able to glean any information as to the use of concrete blocks as a material in their construction.

On visiting, a short time since, the County of Roscommon, our attention was directed to the Round Tower of Oran, in the barony of Ballymoe. Of this tower the height at present on the lowest part of the ground outside is 15 feet; on the inside it measures only 12 feet; the internal diameter is 11 feet 3 inches. The wall at base is 4 feet thick, with a slight batter on the outside. It stands on a plinth of three courses of stonework, which has a projection of 3½ inches on the outside. On this plinth the outer courses of the wall to the height of 7 feet are composed of concrete blocks in seven uneven courses, varying from 6 to 18 inches on face. One of these blocks measures 4 feet in length by 1 foot on face, and 18 in. bed. They are moulded to the curve, and to fit the position they occupy in the wall. The internal surface of this portion of the wall differs from the outside, inasmuch as it is formed with alternate rings of concrete and stone. The upper part of the walls are composed entirely of stone in unequal courses. We have now no means of ascertaining the original height of this tower; the several authorities to which we referred have done little more than mention its name. Nearly on a level with the ground is an aperture, by which we got access to the interior. Over this aperture there is a long flat block of concrete, hanging in rather a dangerous position, which seems to have been intended for a lintel or head over an open of some kind. On the inside, near the top, there is an old stump of a tree growing out of the wall.

Amongst the writers who have noticed this tower is Mr. Marcus Keane, in his "Towers and Temples of Ancient Ireland."* He is not quite correct in his measurements. He says:—

"Oran, situated seven miles N.W. from Roscommon. Here is a small portion (twelve feet) of the base of a fine Round Tower, which seems to have been when perfect one of the largest in Ireland. The internal diameter exceeds twelve feet, and the wall is more than four feet in thickness. Both doorways and windows have disappeared. There is no other vestige of antiquity save a Holy Well dedicated to St. Patrick."

"Uaran Uı Chlabaıᵹ." The name is thus explained in "*Trias Thaumaturgis*":—"Huaran enim sive fuaran idem Hibernis sonat quod fons vivus, sive viva vel frigida aqua è terra scaturiens." "*Patrons* are yet held there on St. Patrick's Day and on the last Sunday in July, called Garland Sunday." See "Annals of the Four Masters," vol. i. p. 130.

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* Dublin: Hodges, Smith and Co. 1867.

CARLISLE BRIDGE.

WE are glad to learn that another effort is to be made for the improvement of Carlisle Bridge and its approaches. At a special meeting of the Municipal Council on yesterday it was resolved "That a special committee be appointed to consider the most suitable mode of widening Carlisle Bridge, and improving the approaches thereto, and providing the necessary funds for the carrying said improvements into effect; said committee to have power to communicate with such other public boards and departments as they may think necessary, and to report to this council."

Mr. Charles Geoghegan's plan (to which we have frequently directed notice) will, we understand, be that likely to be carried out. Mr. Geoghegan has had prepared a very neat model, which he has exhibited on several occasions. It is now at his office, Great Brunswick-street, where it may be inspected. We described it in our number for July 15th, 1868.

It would be well if some information could be supplied as to what steps are being taken for the purification of the river. Summer will soon be on us, and the offensive odours continued!

TOPOGRAPHY OF THE COUNTY OF CARLOW.

No. 2.

THE soil of the County Carlow is for the most part arable. Scarcely any bogs are to be met with—they have been almost all exhausted. The mountainous portion extends from Mount Leinster along the Blackstairs range of bare, barren, and repellant hills for about fifteen statute miles as far as Poulmounty; these mountains form the boundary between Carlow and Wexford counties so far.

In the vicinity of Bagnalstown is the old feudal stronghold of Ballymoon Castle. The remains of this extensive ruin have nothing in them to attract the attention of either the architect or antiquary. Its gloomy-looking entrance is entire, but the interior walls are dilapidated. The court-yard occupies about a statute acre, and was capable of affording room for the drilling of two or three thousand retainers. The Knight of Kerry is the lord of the soil; he has the character of being a good landlord.

The western side of the Barrow comprises the Barony of Idrone West, in Carlow; the soil in this barony is stiff, cold, and tenacious; the recent snow has not yet disappeared, while the rest of this county has put on the genial smiles of spring. With the exception of Clogrennan Castle, the property of Mr. Rochfort, there are few places of any note in this barony.

Mr. Kavanagh's seat at Borris is the next building worth noticing as we pursue our journey southwards. I was fortunate in being conducted over this fine edifice a few days since. The house commands an extensive prospect of the Blackstairs range of hills, together with Mount Brandon and Mount Leinster. Borris House, or castle, is very roomy. Rather much space is taken up with useless passages and gloomy corridors, which give it internally more the appearance of a prison than a gentleman's residence. The drawing-room is very tastefully fitted up, but the library is that which struck me as indicative of the literary taste of the owner of Borris House. Through the courtesy of my conductor I was afforded the pleasure of scanning over the pedigree of the family, contained in a large illuminated portfolio; it shewed their vicissitudes from the days of the MacMorrogh down to the present representative. The work is elaborately and tastefully finished. It is stated that the family of the Kavanaghs of Borris have been and are closely connected with the noble houses of Ormond and Clancarty.

The arms of Kavanagh are engraved on a granite shield over the grand doorway, and bears the following motto in Gaelic (or Celtic):—"Sloᵹan aᵹur Fearrıne," which, I understand, means "Peace and Plenty."

In the smoking-saloon I observed a very good specimen of an African grizzly boar's head, said to have been shot by Mr. Kavanagh when he was in Africa; and on the same shelf I noticed the "empty vault"—otherwise the skull—of one of the descendants of Ham. This skull is supposed to be 2,000 years old! It was brought from Egypt by Mr. Kavanagh, and may contain a moral every time its possessor glances from his smoking chair at its grinning masticators.

The interior of Borris House is not laid out with such exquisite and refined taste as Dunleckney, nor are its pleasure-grounds either. Get a fine view of the Barrow from the summit of Clashganny Hill. This wood and the deep valley beneath reminded me of the Val-del-Elizonda in the Pyrennees. From here down to Graiguenamanagh the country seems to get more picturesque; the lands are better, and the tenantry more comfortable. The County Carlow side of the bridge at Graigue is composed of the village of Tinnehinch. This village forms but a sorry contrast to the bustling activity of its Kilkenny rival opposite. Graiguenamanagh is the most go-a-head little inland town I have visited in the whole kingdom. Mount Brandon raises its head immediately over it, and at its base is Brandon Dale, the birthplace of the county surveyor for Kilkenny (Mr. Burtchaell, C.E.)

Pass by the abbey and village of St. Mullins *en route* to Poulmounty; was much disappointed at the size and appearance of the ruins. From a description I had of the old abbey from a friend whose ancestors are interred there, I was led to expect something great and wonderful, but, alas! it is like almost all burial-places in this country. The graves overgrown with nettles and dock-leaves, and the bones of perhaps your relatives may be knocked about to make room for another tenant till the next comer requires a place for his coffin. Mr. Kavanagh's family are interred here, as are also several other families of distinction. I observed also the enclosure, and the faded *immortelles* on, the grave of Mr. Doyle, J.P., &c., and father of my friend the present borough surveyor of Kingstown.

March 7, 1870. C.E.

MESSRS. PURDON'S GUANO STORES.

VERY extensive oil-cake and guano stores are just being completed for the Messrs. W. and E. Purdon (proprietors of the *Farmers' Gazette*) in Litton's-lane, Bachelor's-walk, under the directions of Mr. D. C. Ferguson, architect. The stores are over 100 feet in length, consisting of four floors, averaging 8 feet in height and 20 feet in width. The upper storey is thoroughly lighted from roof by means of skylights, and is intended for the new printing-office. The modern appliances for the hoisting of goods, &c., have been supplied. The entire is built of granite. The front is punched ashlar, with fire-brick dressings to doors and windows. The cost of the building will be about £1,800, Mr. William Conolly, of Upper Dominick-street, is the builder.

ON ORNAMENTAL ART.*

(Continued from page 51.)

The principles I have laid down have chiefly regard to the treatment of form, but all, or nearly all, are equally applicable to that of colour. For harmony, though commonly applied to colour and sound, is felt to a great extent in the appreciation of objects that appeal most strongly by form. But of all the qualities wherewith we perceive that nature is imbued, there is one which may be termed the sum of all—namely, congruity—and its absence in ornamental art is chiefly to be deplored. Now our errors arise from a love of imitating—actually as far as art can do so —the work of nature; and also from a childish fancy that because those works please us in their proper place, their artificial representation should equally please us whenever an opportunity is afforded of displaying our talent in that direction. Nothing can be more erroneous, or even more repulsive to common sense, which, in spite of its detractors, is now, and I hope ever will be, the motive power in fashioning human wants and wishes. When we enter a room, who on earth expects to walk upon roses or other flowers, or to see Nature's works represented by art in places and on things where they never could appear? Nay, the more perfect may be the imitation the greater is the offence. And indeed—in every art—you, as artists, should regard mere imitation, however useful to the student, as a feeble [illegible]ing to the spectator [illegible] on yourselves. The [illegible]ession should be your [illegible] art, and more especially in [illegible] termed purely ornamental; for though the means whereby you work are powerful and characteristic, yet are they so limited—as compared with those at Nature's disposal—that in the rendering of any scene, even of any object in Nature, it is absolutely incumbent on the artist to give predominance to those parts which shall give the most intelligible idea of the whole, as seen by the light of his individual experience. For art is a compromise, and more eloquent in proclaiming the great truth to be represented by the sacrifice of all lesser truths. In colour and effect of light and shade this doctrine is most salutary and well-founded, because their strength is elicited by comparison. But even in form there will often arise a necessity for such compromise, so far at least as regards the rejection of details not absolutely necessary to the intelligent representation of any object depicted.

There is one more quality in Nature, which, though as regards ornamental art, it is more needful in colour, is yet a useful adjunct to form: and that is "propriety." For there is no form the beauty of which cannot be enhanced by colour. On this point, however, oral teaching is of the least avail. You, as students, must steadily observe, and faithfully copy nature's work; and the natural, and in a lesser degree, the pictorial presence, can alone benefit you in acquiring that experience which, though the offspring of knowledge, is yet the parent of taste.

Now, on all these matters which I have briefly discussed, we may all derive most salutary lessons from those whom we are pleased to regard as barbarians, compared to those whom we are equally pleased to call the most civilised nations of the world. For beauty of form, and harmony of colour—moreover, for the absence of that puerile imitation of natural objects, which I pronounce so detrimental to Art—no manufactured productions of France or Germany, still less of our own country, can equal the rugs and carpets of Turkey and Persia. I have only heard one objection raised against them —I grant a strong one—and that is monotony. But without insisting that too great monotony is less an offence against taste than too much variety, I ask you to look close at those productions, and comparing one with another, you will discover differences, however slight, in form. Moreover, you will perceive a great variety in the combination and tone of colour, the latter being brilliant without gaudiness, and the former ever harmonious.

But whilst I object strenuously to the introduction of natural objects where they have no right to appear, and deeply as I reverence the presence of simplicity, I have no regard for those ascetic disciples of Art who affect to despise ornament in any degree. I neither envy their isolated, however exalted, position, nor can I share in their affected appreciation of simplicity—even to monotony and poverty —in form and colour. Though I strongly object to carpets covered with imitations of flowers, I fail to see the infinite beauty—though I acknowledge the utility of the article—in the monotony of crimson or green drugget; and the common practice of covering our tables with a cloth evinces a dislike to plain wood, however preferable that may be to a more composite article; nor because I think the representation of fruit or flowers on the backs of playing-cards is out of place need they necessarily be without some indications of form and colour. Mere utility is the first object; but that surely may be combined with qualities of an equal, if not higher order; to excite feelings which, in spite of sectarian impulse, will ever have their sway on humanity,—and worthily too,—for whatever gives pleasure to the eye and ear, or other channel to the mind, contributes, even though indirectly, to mental wealth; and the unswerving aim of those who work to give pleasure to others, and of those who live merely to receive it, should be so to fashion the work on the one side, and to refine the desire on the other, that the result may equally contribute to mental health. To this end, the possession of that indefinable quality we term taste is alone necessary. But of all mental acquirements it is the least intuitive; and it can only be gained by the most patient investigation of the materials proffered for its daily sustenance. You will probably ask, as this is so difficult of acquirement, "On whom is the student to depend, in order to correct the errors of ignorance or inexperience?" It is easier to tell him "what to avoid" than "what to follow." And, moreover, in telling him merely "what to avoid," it is very difficult for the teacher to be thoroughly honest without giving offence. But any man in the position I occupy at this moment would be unworthy to address you were he to shrink from saying what he feels to be true from any paltry fear of offending individual vanity, or, still worse, national pride. I fear I must do both; so, unlike the timid bather who, with much shivering, steps ankle-deep into the water, I will take a headlong plunge. In the first place, then, beware of the overpowering influence of public criticism. A French critic on art, lately alluding to the rapid growth of art-criticism, was honest enough to declare that in proportion as the science had advanced the art had retrograded. I cannot wonder that such a result should spring from lay interference, and I cannot but think that the present influence and prosperity of the critics denote a corresponding want of mental activity on the part of the public. Evidently, in spite of the spread of education—either through indolence or an exclusive attention to worldly affairs—we are all more or less disinclined to judge for ourselves, especially in matters pertaining to art. And thus a race of professional thinkers has sprung into existence to supply our intellectual wants. Now I cannot but look upon this extreme subservience to the opinion of others as a base abandonment of reason—man's noblest birthright. Moreover, I defy any man to do his work properly if he is continually influenced by the contradictory opinions of those who presume to be public advisers. You know the fable of the old man and his ass; so on this point I will say no more.

Secondly, Who are these critics? Well, I know personally that many of those officious gentlemen who benevolently seek to instruct artists have simply failed as artists themselves; and a doubt naturally arises whether failure in any pursuit is a proof of a man's ability to give profitable advice to those who are desirous of succeeding where he himself has failed. Lastly, and especially, because, being anonymous, they are perfectly irresponsible; and can safely indulge in prejudices, to favour or condemn, under the deceitful mask of public duty. It is not in the nature of a critic to omit an opportunity for lauding the talent of a friend, or, on the other hand, to avoid saying a smart thing of one in whom he takes no interest, nor cares he what pain or injury may be caused by his cat-like playfulness. For that there is no help. But when he says—with such additional importance as a plural pronoun can give—that he is the mere utterer of public opinion, I differ from him entirely. He takes far too modest a view of his calling, which he knows well is, not merely to echo public opinion, but simply to influence it, and his judgment—given anonymously—will be valued wholly by the importance of the journal wherein it is published. Now I boldly maintain that such a practice is equally unjust to the public writer as to the public reader; and I hope, at no very distant time, to find the presumptuous and irresponsible "we" changed to the modest and straightforward "I"; and that every man who prints a syllable shall be known by name, and his words be accepted or rejected—as a cheque is by a banker—from the known responsibility of the utterer.

Then, again, I warn the student not to place implicit confidence on the opinions of those who are termed the *dilettanti*, or simply mere lovers of art, in contradistinction to those who follow it as a profession. I honor them for that very love; but as guides I cannot accept them, and for this simple reason, that their love is not cosmopolitan. Your perfect *dilettante* has only one love in each art.

And now that I have told the student in search of taste what to avoid, I am bound to tell him what to follow. Briefly, then, he should follow himself, and himself alone, if he wishes to obtain that self knowledge which can alone lead him in the path of truth. Above all should the student in Art assert his individuality if he wishes to thoroughly perform his mission on earth. From his own observation of Nature and Art can he alone collect worthy material for the pleasure of others and the profit of himself. In a second, and scarcely inferior degree, let him bear a reverence, not a blind love, for those who have produced great works in the present; nor let a hasty dislike shut his eyes to the merit of those which have received the admiration of ages. Fear not the imputation of conceit because you are earnest and steadfast in maintaining your opinions. No great work can ever be achieved without a proper amount of self-confidence. The belief that success will be attained, coupled with the modesty and good sense to acknowledge a partial failure, will ever lead to nobler efforts. Such confidence as springs from the knowledge of your own integrity and earnestness is a sign of health and strength, and is very different from the conceit which arises from an unwarranted belief in natural ability. Deeply as I reverence genius as a heaven-born gift, I honour much more the untiring industry which is purely an acquirement, and without which the highest genius is of no avail. For I am a firm believer in the healthy doctrine that man can accomplish whatever he earnestly wills—not passively, but actively; not in dreams, but by downright work.

But what I most deplore in this practical age, as mainly detrimental to the progress of Art, is that though the public individually take the greatest interest in its progress, the nation collectively takes very little; and so Art has not that public footing here which it has in France and other countries. I fear, moreover, that the prospect, at least for the present, is not very inviting, either for those who follow the pursuits of Art or for those who benefit by their labours, either in the way of instruction, or even of pleasure. It might have been meant as a joke, but it was a poor one, when our present First Commissioner of Works lately declared in public he would take good care that "professional persons," from painters down to market-gardeners, should not bamboozle him into loosening his tight grip on the public purse. Now if on this weighty matter the right hon. gentleman is the accredited organ of the Government, it would seem that the liberal views it professes do not extend to that care for the innocent pleasure and the intellectual profit of the public which has ever actuated the most popular governments, ancient and modern. It would moreover appear, taking into account the peculiar idiosyncrasy of our learned First Commissioner of Works, that the post he fills is so unimportant that special fitness is not required for the performance of the duties attached to it. On this point, however, I beg leave, most humbly, to differ with our present rulers; for I am sure if, before accepting office, that right honourable gentleman had been sent to a national school of art for only three months, he would, unless naturally obtuse, have entered on his new duties with a more lively and more healthy appreciation of the public value of Art than that which at present he unfortunately entertains.

And now having, I fear, offended individual vanity, I must further give offence to national pride. The plain fact is that, compared with our Continental brethren, we are sadly wanting in taste; and the deficiency is not confined to one class, but, in a proportionate degree, prevails in all classes, especially those who are exclusively called "working men." This fact has lately been dwelt on by public speakers and public writers, and they regard this inferiority in taste as the sole reason why—with all our known energy and ingenuity, coupled with the natural advantages we possess—those foreign manufactures, in the production of which Art has assisted, should find a readier sale in markets hitherto supplied by our own. But when a return to protection is recommended as a remedy for the evil complained of, I reflect on the wisdom of the well-known fable, and, instead of calling on Jupiter to help us, would it not be better to boldly put our shoulders to the wheels and force the cart out of the ruts into which it has momentarily plunged?

The causes for our inferiority in taste, according to the public speakers and writers to whom I have alluded, if their assertions be true, are not complimentary either to the national character or to the wisdom of those who have hitherto guided the destinies of this great empire; and I believe that one cause is put forward to hide their shortcomings on the other. Public opinion says that foreign workmen are "by Nature" more imbued with "taste"; and secondly, that they are more cultivated in Art than are, unfortunately, our own. But I deny, most strenuously, that Nature has anything to do with the presence of taste, and assert that it is solely an acquirement, resulting, in a partial sense, from contact, but chiefly from cultivation. Here is our real want; and who can wonder at our deficiency in taste? True, we have a few good public collections of pictures, and many national schools of art, most efficiently conducted. But how or when can the "working man" reap the full benefit of such institutions? Why, either by neglecting the work on which he depends for his daily bread, or when, worn with the manual labour of the day, he has no energy—however great his mental desire—to make use of the proffered food.

How different is the artisan's position abroad, and how much more paternal, however despotic, is a government which affords him ample means for innocent enjoyment—directly, for cultivation; and indirectly, for moral improvement—than that which, altho' the creation of freedom, virtually prevents its subjects from reaping the material benefits to be derived from the influence of Art. And this leads me to a question which is ever uppermost in my mind; for I believe the course I have in view is not only beneficial in a worldly sense, but in the highest degree moral and holy. I allude to the opening of our national collections of Art and Science on Sundays—a motion on which subject, during the last session, was introduced by Mr. Gregory, the member for Galway, and, I am sorry to say, not boldly rejected, but *pusillanimously shunted*, by those who ought, in their zeal for education, to have given a patient hearing and an official verdict. For much more than most men imagine depends upon the settlement of that question. I know well that, in time, it will be settled, and in the direction I wish it; but delay in legislating for moral or intellectual deficiency is fatal. The hour passes away, and subsequent regret only proves our weakness in not seizing the opportunity of the moment.

Let us, however, return to facts, and when we have acknowledged their presence let not prejudice interfere in refusing what reason demands. I acknowledge freely, though with regret, that our artisans are deficient in taste compared to their foreign brethren. I further said that such deficiency was entirely owing to a want of cultivation; and lastly, that the means of cultivation, though offered to some extent freely, were under such restrictions as prevented their having any beneficial influence. I acknowledge the excellence of the National Gallery, the British Museum, and that at South Kensington: and, as regards the latter, I think that Mr. Cole and Mr. Redgrave deserve the thanks of every one interested in the promotion of Art-education. But when we turn to France, we find that such collections of Art and Science are not confined to the capital, but are to be seen in every town of any importance; and the same may be said of even the smallest States in Germany. Moreover, those sources of innocent pleasure, and of moral and intellectual improvement, are open freely on the Sunday—that day which throughout Europe is recognised as the "working man's" holiday, or day of rest. Yes; let it be a day of rest as far as the labour of the hand is concerned; but, as to the mind, inaction is no more possible than in any other work of Nature; and let us take care that the weeds therein do not predominate from want of proper care for the growth of a better seed. The Creator lets no day or hour interrupt the beneficent labour of Nature to provide for bodily wants, and it is simply human perversity which prevents us from reaping what He has sown in man to satisfy those of the mind. Our best worship is the appreciation of everything created for our welfare; and of the Creator's gifts human genius is the highest—a spark, however feeble, of the Divine Intelligence. So let our rulers decide whether a "working man"—reluctantly, I use that title in a narrow sense—would not be better employed in contemplating the productions of Art and Science on a Sunday, than in lounging at the door of a public-house, with a wistful eye on the church clock.

MR. C. B. VIGNOLES, C.E.

WITH the current number of *Engineering* is given a portrait of the above-named gentleman. Mr. Vignoles (says our contemporary), President of Institution of Civil Engineers, is descended from one of the members of the old French noble families who took refuge in this country on the Revocation of the Edict of Nantes, which had guaranteed to the Protestants of France the free exercise of their religion. The persecutions by Louis XIV. drove away thousands of the best subjects of France, many of whom settled in Ireland. Portarlington was one of the chief centres of these refugees, particularly the military men. Several of those in Mr. Vignoles's family were officers of the army of William III., and served in his campaigns. Mr. Vignoles's father was a Captain in the 43rd Regiment, and when the late Duke of Kent, the father of her present Majesty, commanded at Halifax, in Novia Scotia, acted as the Duke's secretary. He was afterwards killed at the storming of the Fort of Point-a-Pierre, in Guadaloupe, one of the West India Islands. Sir Charles Grey, then commanding the British forces, gave, according to the custom of those times, a commission to the orphan son of Captain Vignoles, then scarcely a year old. Mr. Vignoles was the grandson of the celebrated mathematician, Dr. Charles Hutton, Professor at the Royal Military Academy, Woolwich, by whom he was brought up and educated for a military engineer. The political principles of Dr. Hutton were so diametrically opposed to those of the Ministry of the day that they refused to allow the young man to enter the academy. But at a later period the Duke of Kent gave him a commission in his own regiment, with which he served during the latter part of the war, which was closed in 1815. Mr. Vignoles was for some time with the Army of Occupation in France, and was employed by Sir Thomas Brisbane in various scientific matters, particularly in preparing comparative tables of the French Metrical System with those of this country, as a check on the commissariat.

Mr. Vignoles's family having had large grants of land made to them in Florida, formerly in possession of the English, he went to that country in the vain endeavour to recover them, and thus had the opportunity of making topographical maps of Florida, and of South Carolina. On returning to England Mr. Vignoles brought forward the designs for Collier Docks in the Isle of Dogs with the expectation of taking the coal vessels which then encumbered the Thames, as they still do, but the Parliamentary powers were refused. Soon after he made the first surveys for the Liverpool and Manchester Railway, as explained in his recent address to the Institution of Civil Engineers.

From that time for the next thirty-five years, and, indeed, to the present date, Mr. Vignoles has been before the public as an engineer, connected with great works in the United Kingdom and in foregn countries. Mr. Vignoles is a Fellow of the Royal Society as well as of several other learned and scientific bodies. His model of the great suspension bridge over the river Dnieper at Kieff in Russia, was a prominent object in the first Exhibition of 1851; and in the second Exhibition of 1862, his model of the passage of his railway through the Pyrenees was equally conspicuous, both as an engineering and geological illustration of the work and of the mountains. Mr. Vignoles is now in his 77th year, and the father of four sons, several of whom are engineers, treading successfully in their father's steps.

THE DRAINAGE OF THE SHANNON AND SUCK.

THE Marquis of Clanricarde moved in the House of Lords for a copy of a letter addressed to him by Mr. Stansfeld, Secretary to the Treasury, on this subject, thinking it right that the matter having been considered by a committee of this House, the letter should be communicated to their lordships. There was an ambiguity in it which he should like to hear removed, for it did not clearly appear whether the entire advance would have to be repaid, or whether the Government would propose a grant of public money in aid of the work.

The Marquis of Lansdowne, on the part of the Treasury, assented to the motion. With regard to the noble marquis's question, it might be necessary to explain that the drainage of the Shannon and Suck had occupied the attention of successive Governments for something like 40 years. The works were eventually executed at a cost of £600,000, half of which was provided by the Government, the other moiety borne by the counties and proprietors. Severe criticisms were afterwards passed upon the enterprise, and Mr. Bateman was deputed to inquire whether some further improvements might not be reasonably made. He reported that the works proposed would cost £290,000, and that the profit would probably be £6,000 a year, which, capatalized, would be equal to £120,000. The Government declined to make the outlay on such *unremunerative* terms, but directed the Board of Works in Ireland to inquire whether a partial improvement might not be carried out. This report showed that, whereas the improvement of the upper reaches would cost £112,000, and would reclaim

8,000 acres, thus costing £14 per acre, the lower reaches—those below Atlone—might be improved at a cost of £178,000, whereby 16,000 acres would be reclaimed, thus costing £11 per acre. The Government were preparing a bill for carrying out the improvement of the lower reaches, and although, of course, anxious to reduce and narrow the deficit as much as possible, they were prepared to make good the difference between the total cost and the sum which the works would return. This would show that they were desirous of promoting the *material* and *economical* interests of Ireland ! !

CAHERCONLISH CHURCH, CO. LIMERICK.

WITH this number we give an illustration of a new church in course of erection at Caherconlish, County Limerick. The total length will be 59 feet, and width 22 feet 6 inches. It will seat about 200 persons. The tower, which adjoins the porch, will be used as a belfry, and will be 105 feet high, including vane at top. The total cost, inclusive of tower and spire, will be £2,000, a portion of which will be defrayed by D. Gabbett, Esq., of Caherconlish House, who, in addition, has given a free grant of [illegible] on which the church [illegible] ect is Mr. [illegible] Harcourt-street, [illegible] contractor Mr. Kavenagh, [illegible]

ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND.

THERE will be an ordinary general meeting of the Institute on Thursday evening next, the 17th instant. A council meeting will be held previous to the general meeting. The successful competitor for the prize of the session will be announced. Mr. T. Collot will read a description of his measured drawings of Grey Abbey, County Down, submitted in competition for the above prize; and Mr. James H. Owen, M.A., fellow, president, will read a paper on the recent building case of "Doolin *v.* Dixon," which has been fully reported in our columns. Mr. James Otway, C.E., T.C.D., will be submitted for ballot as associate.

THE ROYAL DUBLIN SOCIETY.

THE sixth evening scientific meeting for the session of 1869-'70 will be held on Monday evening next, in the Lecture Theatre.

COMMUNICATIONS.

Prof. Hennessy, F.R.S.—"On the Climate of Ireland in reference to the Cultivation of Flax."

J. Hayes, C.E.—"On Co-operative Associations in reference to the Rural Population."

FOR EXHIBITION.

Richard Johnston, Esq.—A series of studies of Ancient Ecclesiastical Edifices of Ireland.

A Collection of Insects from Trinidad, presented to the Society by L. de Tessier Prevost, Esq., 47th Regt.

THE TELEGRAPHS OF THE FUTURE.

WHAT are the telegraphs of the future to be? We have accomplished the Shakespearian feat of throwing a girdle round about the earth in forty minutes. We have brought all the capitals of Europe within whispering distance, and we turn to our morning paper now to find the latest gossip of the Courts of the Tuileries, of St. Petersburgh, of Cairo and Constantinople, Vienna and Madrid, as instinctively and as thoughtlessly as we used to turn to the quotations of our own markets. Here, too, we have in the terse, matter-of-fact form of our own *Court Circular* and the latest accounts from Tattersall's the price of gold yesterday afternoon at New York, the rates of exchange at Hong Kong and Shanghai a few hours previously, and the price of grey-shirtings, Madollopans and Bannermill twist at Calcutta and Bombay. All these great centres of politics and commerce have been brought into a charmed circle of electric intercommunication, and the stockbrokers, the cornfactors, the merchants of London and most of our great provincial towns never think of commencing their day's work till they have looked through their morning budget of telegrams from their correspondents at all the main points of political and commercial observation any more than they thought a few years ago of going upon 'change till the post was in and they had read their letters. When Lord Macaulay went out to India thirty years ago as member of the council he took the works of St. Chrysostom with him to kill his time on the way. It was then a journey of four or five months, and a merchant thought an answer per return prompt if it reached him within the year. These were the days of old Leisure, of weekly newspapers, of shilling postages, of stage coaches, when Edinburgh and London were for all practical purposes further apart than London and New York are now, and when it took the head of the Government in Downing-street longer to communicate with the Viceroy of Ireland than it now takes the Duke of Argyle to send an order to the Commander-in-Chief of the Indian army on the slopes of the Himalayas. It is harldy life-time. The recollections of many men who have not yet reached their grand climacteric may compass the period. And yet look at our position today! You could hardly find time to get through Victor Hugo's *L'Homme Qui Rit*, or Mr. Anthony Trollope's last novel now in the course of a journey from Marseilles to Calcutta; a rise or fall in the bank rates of discount alters the quotations of all the markets of the two hemispheres in eight-and-forty hours; a variation in the price of the three-per-cents. brings orders from half the capitals of Europe and America to buy or sell stock; and a little extra speculation in corn at San Francisco puts all the provincial markets of England in a stir and perhaps culminates in a few days in a panic in Mark-lane. And yet with all this we are not quite at the end of our tether. What is to be our next exploit? The Atlantic cable has lost more than half its charm within a couple of years, and even in imperial eulogies upon the advancement of science no one thinks of attempting to round off a sentence or to work up an oratorical climax by the remotest allusion to so commonplace and trifling a fact as the telegraphic intercommunication of the Old and New World. The Cunard passengers turn to the *Times* on their arrival in the Mersey for the latest news from Washington and New York as a matter of course; and we recognise the fact simply as one of the ordinances of Nature. Talk of it as one of our triumphs of civilization on the Liverpool flags, and the cotton-brokers will turn their heels upon you as an interesting specimen of the genus Verdant Green. All that they are thinking of now in the way of ocean telegraphy is how to get their messages a little oftener and a little cheaper, how to bring Calcutta a few hours nearer, and how to carry the wires from Cape Comorin across the Indian Ocean to Sydney and Wellington, across the Pacific to Cape Horn, over the pampas and though the forests of South America, along the banks of the Susquehannah through Mexico to New Orleans, Washington, and Boston, and thus complete the circle. And of course this will be done.

The purchase of our telegraphs by the Government has set free millions of capital hitherto locked up in our own island wires; and ocean telegraphs are the necessity of the hour. The transfer of the wires to the Post-office has put an end to all the speculations that might have been developed in the interest of the public service by the spirit of rivalry among ourselves. Perhaps the Government will be able to do more for us than we have been able to do for ourselves, and to do it cheaper into the bargain. We hope they will. The Postmaster-General and his lieutenants, Mr. Scudamore and Mr. Edmund Yates, will have anything but a pleasant time of it if they do not, if for the next ten years they venture to publish a balance sheet showing a trifle in the form of profit upon the working of the wires. Every town and every village will have to be brought within the electric circle; and it requires very little imagination to anticipate the sliding scale of charges for messages from a shilling to a penny, that most of us may possibly yet live to see, the supercession in fact of no small part of the correspondence of the Post-office by the wires. Once let us get below the sixpenny standard and the increase of business will in very little time bring the Post-office down to penny messages for, say, five or six words just as the tariff reductions of Sir R. Peel brought us down step by step to custom duties of the most trifling description, counterbalanced in every case by an increase of business and a rise in the amount of the revenue returns. This, however, we hope, is not to close our telegraph vista. We want to see a little more perspective in the picture. Of course the Government will permit nothing to be done that will in any way infringe upon their monopoly. But we must hope and believe that it will be possible within the limits of this imperial monopoly to develope private telegraphs. Sir Charles Wheatstone a few years ago talked of laying down a dozen wires within, if we recollect rightly, the compass of a lady's skein of silk, for use in families; and that idea ought not to be lost sight of. Why should not every manufacturer here in Birmingham, in Nottingham, Leeds, or Manchester have a coil of wires brought from his country house or his mills and workshops into his library, at his country house at Handsworth, say, or Edgbaston? We know no reason in the nature of things, why with a Morse instrument in their hands our contemporaries, the editors of the *Post* and the *Gazette*, should not sit down in their dressing gowns and smoking caps and criticising over a cigar one of the brilliant articles they have thrown off at the office, telegraph the correction or two that we all of us wish to make after supper, when correction is impossible, and ask in return for the last scrap of intelligence that the telegraph boy has brought in. The Duke of Sutherland has a private wire connecting his hall with the head-quarters of the London Fire Brigade, and why should not people who choose to go to the expense lay down private wires from their houses to their places of business, and even with the private houses of their own sons and daughters? This idea of ours may sound slightly chimerical to-day. It will not to-morrow. The commonplaces of to-day are generally the chimeras of yesterday, and in 1875 people will probably be wondering how people got through the day without the use of a coil of private telegraph wires, just as we are wondering to-day how people got through their day a few years ago without their morning supply of Reuter.—*Midland News.*

THE HOUSES OF PARLIAMENT.

WITHIN the Houses of Parliament great things have been in hands for several months past, under the direction of Mr. E. M. Barry, R.A. The operations have been more in the direction of decoration than of structural alterations. The chief portion of these works has been the enrichment of the groined roof of the grand central hall, the panels of which have been filled in with floral, heraldic, and geometrical mosaics by Messrs. Salviati. A glazed lantern has been opened at the apex of the roof, which proves very effective. The mosaics are of glass, and very rich. They are sustained by profuse decorations of the ribs of the roof. The effect is impaired, however, by the contrast presented between the gilded and parti-coloured roof and the large proportion of sober stone-colour work under it. We (*Engineer*) are informed that the decorations have cost some £37,000, and that they have been marred in effectiveness through a paring down of the vote by £2,500 by the House of Commons. If this be so the House has suffered from a grave mistake.

Other important improvements have been effected in the lobbies, branching at right angles from the central hall to the House of Lords on the right, and the House of Commons on the left, and to the committee-rooms opposite the entrance. These improvements include the fitting of elegant glazed screens at the inner ends of the lobbies, and the cleaning of the stone-work, with the picking out in gold, and the appropriate colours of the heraldic devices upon the bosses of the roofs. The lighting of the lobbies has been also much improved by reducing the thickness of the mullions and cusps of the windows, and otherwise enlarging and improving their illluminating areas. Over the four principal entrances to the central hall are large panels with Gothic-arched heads. These are to be filled in, we believe, with mosaics by Salviati, representing the four patron saints of the United Kingdom—St. George and the Dragon for England, St. Andrew for Scotland, St. Patrick for Ireland, and St. David for "the principality." The first of these—St. George—has been laid in, as a specimen, in the panel over the Lords' lobby. If considered a success we presume that the likenesses of the other three saints will follow. Our impression concerning this specimen of mosaic on a large scale is, that during the day it cannot be seen, and that at night, when the great gas chandelier is lit up, the glare it presents is dazzling almost beyond endurance, and the reverse of picturesque. The fine distemper historical scenes in the Commons' lobby are equally effective, and will bear any amount of scrutiny and the keenest criticism, whether in day or gaslight.

THE STONEWORK OF THE HOUSES OF PARLIAMENT.*

THE condition of the stonework of the New Houses of Parliament is at last beginning to attract serious attention. When pieces of masonry varying in weight from 5lb. to 10lb. or 15lb. come crashing down, it is no wonder that some uneasiness should be felt, at least by those who reside in the Palace, or whose duties take them thither. Only a short time since a piece of carved work, weighing between 70lb. and 80lb., fell from the summit of the Clock Tower upon the roof of the house below inhabited by the record clerk of the House of Commons, Sir Thomas May. It passed through the iron roof as if it were so much paper, broke an iron girder, and was stopped only by the stout brick arches beneath. Another time a piece of about 18lb. weight fell into one of the courts and was shivered nto fragments just after no less a personage than the Usher of the Black Rod had passed through. At another time a fragment weighng about 10lb. fell at the feet of the policeman on duty outside the entrance into Westminster Hall, at the south end, just opposite he Abbey. During every considerable storm a shower of pieces of stone, from the size of a walnut to an orange, rattle down upon the ron roofs. We believe, indeed, there is a pecial functionary appointed to go about the oofs and rake the *débris* into heaps. There s never any certainty as to when and where hese sculptured morsels are going to fall; nd the River Terrace, where on summer ights the members walk and smoke their igars, is not likely this year to be so much frequented as usual. More pieces break off from the carved terminals supporting the gilt anes than from any other parts; the reason eing that the rods which carry the vanes are f iron instead of copper, and as the iron xidises it swells and splits the stone. In no emote time this defect is likely to cause the estruction of the upper parts of all the pinacles. The only change likely to do much ood is to substitute copper rods for the rods of iron. Besides this the stone is rotting eeply in broad discoloured patches, in regular nes all round what are called the string courses. Before it has been forty years in xistence the New Palace of Westminster hows far greater signs of external decay than many structures of ten times its age. Certainly if reports, inquiries, commissions, and committees could have done any good, the new Houses of Parliament ought to have been about the soundest buildings ever reared. In the first instance a commission of scientific men and architects was appointed to ascertain the best kind of stone to be employed. These commissioners must have had what the Americans call a good time of it in prosecuting their inquiries, for they appear to have visited every castle, abbey, and ancient house in England. In the end they recommended the use of a magnesian limestone, geologically called dolomite, which abounds in Derbyshire, and of which Bolsover Castle, still in fine preservation, though of the date of 1680, is built. So various is the quality of this stone that the same quarry will furnish the best and closest-grained seams and the most porous and most worthless. Sir C. Barry, we believe, wished that an experienced practical man should be appointed to examine all blocks sent from the quarries. But the Government did not see the necessity of this recommendation, and the post was never properly filled. Two quarries were selected in Derbyshire—the Mansfield and the Anston. The former, unfortunately, could only furnish a small supply, but what it yielded was of excellent quality. The Anston quarry had an abundant supply, and of this the New Palace is mainly built. The difference between the two kinds of stone is now as easily distinguishable in the external walls of the building as the difference between brick and marble. The Mansfield stone is as sharp and true in outline as when it left the mason's hand; the Anston stone in all exposed positions is fast rotting away. Experiments which have been made show that some of the stone employed is of a most porous kind; indeed, a cube of stone nine inches square was found to be capable of absorbing no less than three pints of water in forty-eight hours. How many gallons, then, would the whole building absorb during two or three days' heavy rain? and what must be the result when in winter the rain is followed by a frost expanding the absorbed water into ice? As a matter of course the delicate carvings must crack into splinters. The process of decay is thus going on steadily and swiftly, and some remedy should be immediately applied. The report recommending the material to be employed in building the New Palace dwells upon the necessity of special care being taken in the selection of stones for the west and south-west faces, as there, it says, the greatest tendency to decay would always be found to exist. Upon what evidence this theory was based we do not know, but the exact reverse of what was predicted has happened, for it is in the east and north-east faces that the stone has most rapidly decayed. One can, in fact, draw a series of lines round the building where the stones are rotting, and these lines will be found to correspond with what are technically called the string courses, that is, the stone mouldings which project above and below the bands of carved work. Upon these the water drips from above, and then trickles over to those beneath, and so on from top to bottom, till the constant dropping wears away the stone, and the inscriptions are becoming illegible, and the little pinnacle carvings falling away. The same process has gone on, but not to so great an extent, at the Geological Museum in Jermyn-street, though the stones of that building, as might have been expected, were carefully examined when selected. It is to be feared, however, that most kinds of dolomite are too porous to withstand the London climate in their natural state. Their pores require closing to protect the surface from the action of moisture, the destructive effect of which is increased by the sulphureous acid which is generated in the London atmosphere by the hundreds of thousands of coal fires always burning. The Caen stone endures our climate better, as we see in Westminster Abbey—much of the east end of which is built of this material; but the Mansfield stone appears to be best of all in this respect.

Of course when the stonework began to decay, as it did before the New Houses were half finished, the methods proposed for its preservation were almost innumerable, some of them virtually amounting to a plan for rebuilding the whole structure. The favorite device, however, was to coat the stone with various liquid compositions, so as to fill up its pores, and keep them air and water-tight. About twelve years ago two of these inventions were tried on portions of the walls. One was a liquid prepared by Mr. Ransome; another was a solution of silica, the invention of Mr. Szerelmey, a practical chemist, who has devoted his scientific knowledge to the discovery of preservatives against the decay of stone, wood, and iron. A committee, consisting among others of the late Professor Faraday, the late Sir Charles Barry, and Sir Roderick Murchison, was appointed to decide upon the merits of the competing inventions, and its verdict was in favor of Mr. Szerelmey's plan. The test of time apparently confirms the judgment of the committee, and the composition which it recommended has, after a lapse of eleven years, been re-examined. During the interval that has passed it has been severely tried, having, we believe, been scrubbed with wire brushes and with sand and sulphuric acid. Yet it remains as bright and vitreous as when first put on during a heavy shower of rain. Among other things petroleum and what is called liquid glass have also been tried. The petroleum makes the stones look black and greasy, but still it must to some extent fill up the pores, and so for a time retard decay, just as, we believe, the boiled linseed oil has done when applied to the Geological Museum in Jermyn-street. As to the water-glass, it is strange that any practical chemist could have thought of it for such a purpose. Water-glass is only silicate of soda. If all the stonework could be immersed in this for a year or so it would form on the outside a silicate of lime—hard and durable enough for all time. As it is, it has merely been smeared on with a brush like any other paint or solution. The carbonic acid in the air turns the silicate of soda into carbonate of soda, producing a mouldy efflorescence which is easily wiped off with the hand, and leaves the stone as exposed to decay as ever.

Besides these various compositions another mode of treatment is now, we believe, being pressed upon the attention of the Chief Commissioner of Works. This is nothing less than the cutting out of the decayed parts of the masonry and the substitution of stones of a better quality—in other words, the rebuilding of a considerable part of the Palace. In the end perhaps this remedy may prove to be the only effectual one, but it is obviously a remedy of a very desperate character, and ought unquestionably to be adopted only after all other measures have been fairly tried and failed. We certainly do not think it can be said that this has yet happened. Indeed, there is very strong practical and scientific evidence in favour of at least one of the protective compositions which have been already tried. The plan of cutting out the decayed stones would be very costly—in fact, the cost would be indefinite: once begun it would be difficult to say where it should stop. It is perfectly plain, however, that the present condition of the Palace of Westminster is not only disgraceful, but even dangerous.

THE FINE ARTS.

WE have been favored with a view of a large historical picture, representing the meeting of Henry O'Hagan, the foster-brother and deputy of Hugh O'Neill, and the Earl of Essex, near the fort of Aclint, on the River Lagan, on the 6th September, 1599. The picture is well colored and highly effective. The artist is Mr. Henry O'Neill, author of several works on the fine arts in Ireland. Should not this painting appear amongst those to be exhibited at the Royal Hibernian Academy this year?

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* From the *Pall Mall Gazette*.

THE GOLD-FIELDS AND MINERAL DISTRICTS OF VICTORIA.[*]

This is a wonderful volume, descriptive of a wonderful country, and we may add people, for it would be vain not to see that English as they are by blood, the Victorians already begin to show the evident marks of a pullulating nationality. It almost takes one's breath away to read here the soberly composed, almost statistic account of their natural resources, production and wealth, already in their national infancy acquired, and to contemplate what these and they must become within the next hundred years.

We wish we had space in this Journal to devote to a review worthy of the subject of this volume and of the volume itself, which in typography, style, paper and composition does the highest credit to Melbourne printers, and to the science, zeal and intelligence of the leading spirits of the great Colony which has produced this record of its greatness and progress.

No such ample, orderly, and clear account of gold-fields and gold-winning operations has ever before been given anywhere; and the mining engineer or metallurgist seeking for information on these specialities, will find this, as we have done, the best source anywhere available.

A well-written introduction sketches the history of those circumstances which led to the production of the volume, in the course of which Mr. Smyth, with a modesty which is surely more than needed, wishes it to be remembered that he is "merely a compiler"; we can only say, we wish many of our home compilers, with far more pretension, had his orderly system, freshness, and intelligence. We here have a table of the gross produce of the gold-fields and mines of Victoria, from 1851 to 1868 inclusive, consisting of gold, silver, tin, copper, antimony, coal, lignite, kaolin, flag-stone, slates for roofing, magnesite, sapphires and diamonds, forming a gross total in money value of nearly one hundred and forty-eight millions sterling. Then follows a capital panorama of the mineral districts, in which we have occasional sketches of natural history, and, here and there, of some of its special Australian marvels, illustrated by beautifully-executed woodcuts of trees and forest scenery; which if they have been produced, as we presume they have, in the Colony, prove that the fine arts do not lag very far behind the rough race of the settler in his subduing and replenishing of the earth.

What glorious things some of these sketches show us! Here, at p. 27, is the stump of a fallen Eucalyptus (*E. amygdalina*), throwing out tremendous ligneous buttresses at every side; 69 ft. in circumference at a little above the ground, and which was 330 ft. in height. Which of us puny Londoners can adequately realise a single tree standing in St. Paul's Churchyard, shouldering at once the church and the houses around it, and rising high above the dome? and yet, in this same forest of Dandenong, in one acre of ground, twenty trees, each above 350 ft. high, were counted, thicklyshouldering each other out of existence.

Many of the native timbers of Victoria, as those who examined them with any care when shown by sample in 1851 at the Great Exhibition, are superb in beauty of colour and feathery texture, infinitely more beautiful for furniture than the heavy cumbersome mahogany and walnut in which we delight here at home. It surely only needs some Jackson and Graham, or Gillow, to once start the fashion, and these lurid reds and ugly brown woods would soon give place to the golden sunny hues of furniture made of Australian timbers.

The Victorian colony, of about eighty-seven thousand square miles, consists, geologically, of granitic and plutonic rocks—Silurian, Devonian, and many rocks belonging to something between these limits, metamorphic or not. Newer carboniferous rocks, schists producing petroleum, &c.; basalts and volcanic rocks; tertiaries, including thin alluviums; eruptive rocks and gold drifts; limestones of various ages; and unexplored formations, in about the following proportions superficially:—

Granites, &c.	2,200	square miles.
Silurians to Devonians ..	28,000	" "
Carboniferous	3,200	" "
Basaltic and volcanic ..	10,300	" "
Tertiary, with the gold drifts	29,000	" "

and the remainder limestones of different ages, and unexplored country.

The gold-fields known to exist are estimated at a minimum of *twenty million acres*, of which not more than six hundred thousand have yet been opened or explored. They may be, therefore, said to be practically inexhaustible.

It was announced as long ago as 1788 that gold had been found in Australia, but the authority is vague, and nothing came of it. In 1850, news of gold being found here and there began to be bruited about, and in August 1851 a little girl picked up a small nugget of gold out of the mud of a street in Melbourne. In that year a reward was offered for the discovery of a workable goldmine anywhere within two hundred miles of that city; and before the end of the year almost a *stampede* of the whole adult male population of Geelong had gone off to the "diggings."

Scientifically the most valuable portion of this noble volume is its thick middle slice, extending to about two hundred and eighty pages; comprising the modes of occurrence of gold, with its chemical constitution as it is found, followed by ample details, and illustrated by first-rate maps and sections of the great distinctive divisions or forms in which it is found and wrought; viz., by surfacing and shallow sinking, by slucing and hydraulic mining, by deep rib sinking, and by tunnelling, i. e. into the drift formation, and, lastly, by quartz-reef mining and crushing, which is, strictly, the only gold-mining proper, all the others being but more or less gigantic forms of operations, like our tin-streaming in Cornwall. In these admirable chapters there is comprised a mass of important geological and mining information of a strictly scientific character, as well as a body of practical knowledge of gold-getting in all its forms.

Men well capable of judging, indeed the best capable, dissent much from the (in many respects) crude and hasty views of some of our stay-at-home geological "great gun" authorities, as to the lithological and geological indications of gold; in fact, much of the "gold predictions" upon which a good deal of self-congratulation has been rested, seems to have been not much more than a lucky chance shot, at any rate does not contain the expression of any fact in nature. A complete catalogue of all the remarkable nuggets found since the commencement of the gold discoveries, with the weights given, follows these chapters, enough to make a miser's teeth water to read. The heaviest single "nugget" found was in weight about 184½ pounds troy, and the gold sold for above £9,300.

Besides gold the following metals have been already found in Victoria, viz.:—Osmi-iridium, which almost assuredly infers platina and its other attendant metals, silver, tin, copper, antimony, zinc, lead, cobalt, manganese, molybdena, and iron of course abundantly. Bismuth, latterly so rare in Europe, or so completely the subject of a close monopoly as to be at present worth about 18s. per pound avoir., has latterly been found in considerable abundance, and promises to become a valuable adjunct to European supplies. Messrs. Johnson and Matthey, of Hatton Garden, London, have smelted a good deal of it. Native sulphur has been found, though as yet not wrought. Sapphires and diamonds have been detected beyond doubt in the gold alluvium, and when more exact mineralogical knowledge and precise observation shall have been brought to bear upon these deposits, it can scarcely admit of doubt that many other gems and stones of beauty for fine-art purposes will present themselves. Alunite, gypsum, and salt have also been proved to exist; altogether a vision of future boundless wealth.

Those directly interested in mining operations and machinery will find in this volume the best account we have anywhere seen of the special machines and contrivances for gold-washing; and some of these curiously contrast with the machinery, with some gradually and constantly applied improvements, which has been in use in Hungary and the East of Europe for ages for like purposes, and which also curiously compares with the Russian contrivances adopted in the Oural.

KINGSTOWN WATER PIPES.

The tenders sent in for supplying water pipes to Kingstown were read and considered by the Commissioners on Monday. The following were the respective amounts:—Messrs. Turner, £7,819; Edington, £8,026; Edmundson, £8,246; Ross and Murray, £8,414; Wardrop, £9,404. Messrs. Edmundson were declared the successful contractors. A member of the board suggested that it be stipulated that the contractors should employ Kingstown people in carrying out the work, as there was much poverty in the district.

CONVERSAZIONE AT BURLINGTON HOUSE, LONDON.[*]

On Saturday, the 5th instant, Sir Edward Sabine, President of the Royal Society, held his first reception for the present season; and, as is customary on such occasions, a collection of scientific apparatus, distributed through the rooms at Burlington House, afforded to the visitors an opportunity to examine novelties and improvements. From Mr. Apps's wonderful and gorgeous vacuum tubes, to the appliances for imparting a liberal education to the blind in the College at Worcester, there was a wide range, as may be gathered from what follows.

A chronograph for recording the speed of a cannon ball fired from a gun, at different parts of its course, has been for some years in use: one invented by a Belgian officer; another, the best of its kind, by the Rev. F. Bashforth, of Plumstead. But something more than this was wanted—namely, to know what was the movement of a projectile within the gun itself; and this something more is accomplished by the chronoscope invented by Capt. Andrew Noble, of the Elswick Ordnance Works, Newcastle-on-Tyne. It is a singularly ingenious machine, and, being shown in operation, proved eminently attractive to Sir Edward Sabine's numerous visitors. It comprises wheel-work, set in motion by a heavy weight, a dial which indicates the rate of motion, and a series of disks rotating on a common axis. Immediately in front of the edge of each disk is placed the terminal of an electric wire, the other end of which is connected with a gun, at perhaps fifty or a hundred yards distance. Through the sides of the gun, at regular distances from breech to muzzle, iron plugs are screwed. In the centre of each plug works a piston, which, by pressure against its inner end, can be pushed slightly outwards: to its outer end the wire is attached. When all is ready, the disks of the chronoscope are made to rotate by the wheel-work with great velocity,—the gun is fired,—the ball, or projectile, as it rushes along the bore pushes the inner ends of the pistons one after the other,—the outer ends give a slight jump, sufficient, however, to cut the wires thereto attached, and by this cutting a spark is on the instant produced at the terminal on the chronoscope. The edges of the disks are coated with white paper, under a film of lamp black. The spark burns off a minute speck of the black, and discloses an equally minute speck of the white paper. The first spark comes, of course, from the wire nearest the breech, and the last from the one nearest the muzzle, and from the intermediate ones in their order. The time between one and the other is almost inconceivably small; but as the chronoscope will measure the hundred-thousandth part of a second, the movement of the projectile along the gun is accurately recorded by the specks on the disks, and is read off on a scale to four or five places of decimals. At Burlington House the gun was represented by a service rifle charged with gun-cotton, which makes no smoke; but the results were similar to those produced by one of the three hundred pound projectiles fired at Woolwich, and excited much admiration.—They were witnessed also on the following Monday by Mr. Childers, and a select party of naval and military officers, who now understand that by the experiments already made with the chronoscope, our knowledge of the behaviour of different kinds of gunpowder has been so much extended as to lead to greater efficiency with less cost in artillery practice; and at the same time the experimentalists are arriving at conclusions as to the pressure of the gases on the inside of the gun.

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[*] "The Gold-Fields and Mineral Districts of Victoria; with Notes of the Modes of Occurrence of Gold and other Metals and Minerals." By R. Brough Smyth, F.G.S., Ass. I.C.E., &c. Melbourne, 1869. [Reviewed in *Practical Mechanic's Journal* for March.]

[*] From the *Athenæum*.

Mr. Hawksley exhibited a self-illuminating ophthalmoscope, constructed on a plan suggested by Dr. L. S. Beale, which can be used in full daylight. This is important, as it obviates the necessity for examining a patient in a dark room, and allows of his taking any convenient posture. Numbers of the visitors during the evening looked into a human eye, and saw the retina, and could compare it with those of a cat and a rabbit which were caged up on the table to undergo examination. At the same table, Dr. J. B. Sanderson exhibited a sphygmograph, and a stethograph—the one to show the beatings of the pulse, the other those of the heart. The principle of the instrument is pneumatic: tubes convey the impulses from the chest or the wrist to a drum, on which a delicate indicator makes every movement visible. The value of these instruments in diagnosis will be obvious to all medical practitioners. Dr. Sanderson had provided a subject whose heart beating somewhat irregularly, enabled him to demonstrate satisfactorily the capabilities of his improvement.

Mr. Browning has invented a bright-cross micrometer, which, when fitted to a star spectroscope, overcomes the difficulty of determining the position of the lines in a faintly luminous spectrum, such as Jupiter gives, especially at the red end, where the lines discovered by Mr. Huggins have to be searched for, combining a tube, a reflecting mirror, and a glass case marked with a x, he produces a bright x on the spectrum, and thereby can readily measure fine lines, even in the most refrangible part, where a wire or web would be imperceptible. Other noteworthy instruments by the same maker were microspectroscopes for showing absorption spectra; a spark-condenser for use in the deflagration of metals, in which the insulation is perfect, and the surface unusually large; and especially remarkable are the stereograms of Mars, which, aided by the observations of the late W. R. Dawes, Mr. Browning has worked out with praiseworthy skill and accuracy. In a series of four they exhibit the entire globe of Mars all round, and from pole to pole, with such clearness that the practised observer can identify all the continents and islands, the seas and straits, which have been named after eminent astronomers living and dead. An ordinary observer even would be struck by the appearances which show that Mars has much in common with our earth; polar snows, which broaden in winter and narrow in summer; land and water parcelled out, but with a difference, the principal masses of land forming an equatorial belt, and not stretching from north to south, as with us, while the bays and fiords run leagues farther into the land than any which Norway can show.

Sir W. Thompson's quadrant electrometer, with an improvemennt by Mr. Becker, was exhibited by Elliott, Brothers; in two places there were specimens of Faure's new carbon battery; and the India Rubber, Gutta Percha and Telegraph Works Company showed a Leclanché battery which, with cells of peroxide of manganese and zinc and a saline solution effects a great economy in the work ordinarily required of an electric battery. But as regards battery work, the chemist of the Mint, Mr. W. C. Roberts, availing himself of Jacobi's process, has achieved something surprising with his specimens of electro-deposited iron. The source of the deposit is a solution of sulphate of iron and sulphate of magnesia; the rate of deposit is about the same as with copper, and the iron thus obtained is so hard that it will scratch glass, and has been found eminently useful for *clichés* and plates for printing purposes. Among Mr. Roberts's specimens were bank-note plates, medallions, mouldings and raised work of various kinds; and one plate had been converted into steel by a process which was not revealed. It is easy to foresee that so successful a method of depositing iron of exceeding hardness may be largely employed in giving a surface to rough iron-castings.

The model of the Wolf Rock Lighthouse deserves a word of notice, for it represents an achievement to which all ships sailing round the Land's End will be largely indebted as long as the structure endures. It stands on a lone rock of hard porphyry about half way between the extremity of Cornwall and the Scilly Isles, and rising to a height of 116 feet, and showing a revolving dioptric light of the first order with alternate flashes of red and white, has nullified a danger which had existed ever since the sea swallowed the ancient territory of Lionesse. More than 44,000 cubic feet of granite were used in building the lighthouse: the works were carried on at intervals dependent on weather from 1861 to 1869, and occupied in the whole 189 days of ten hours each. The light was first exhibited with the commencement of the present year, and has been regularly continued from sunset to sunrise. The building was designed by the late James Walker, and was for the most part erected under the superintendence of Mr. J. N. Douglass, at present engineer to the Trinity House.

Captain Hans Busk exhibited a model of a steam life-ship, which he offers as likely to render good service where the life-boat fails. The life-ship with a crew of thirty men is to keep the sea, and in case of falling in with a vessel in distress would render assistance from the windward, which would be easier and often more effectual than when borne from the leeward in the teeth of a gale by a life-boat. The life-ship could "warp down" a boat to a helpless vessel, or approaching near and dropping anchor, could fire a rocket and send a line with the wind, and so establish communication.

Mr. S. J. Mackie thinks he has solved the problem of a rapid and easy ferry from Dover to Calais, by his swift Channel passenger steam-vessel, which will carry a thousand passengers at once, and roll not more than 13 inches in the stormiest sea. He showed two models, one of which, 8 feet in length, steamed merrily up and down a tank provided for the occasion. Two water-ways, with three paddle-wheels working in each, extend from bow to stern; and it is asserted that the vessel when built will cross the Channel in less than an hour.

From all this it will be seen that the President of the Royal Society's Receptions maintain their philosophical and scientific character. But the Arts are not forgotten, as was proved by many objects of use and beauty. There were, lent from the India Museum by Dr. Forbes Watson, specimens of the *Rhea*—the China grass or nettle, which grows abundantly in the East, and for the "dressing" of which by an efficient machine the Indian Government has offered £5,000. The fibre was seen in all stages from coarse brown to fine and silky whiteness, and the small pieces of cloth showed the different textures into which it could be woven. Col. Sir H. James, Director General of the Ordnance Survey, exhibited models of the mountain country including Sinai and Serbal, and numerous photographs of scenes in different parts of that stony but interesting country. The antiquities recently dug from tumuli at Kertch, and collected by Mr. C. W. Siemens, comprise exquisitely beautiful specimens of goldsmiths' work, of seal engraving, of armour, and other relics, the date of which is supposed to be from three to six centuries B.C.; and there were sculptures very pleasant to look upon: among which Noble's statue of Cromwell, Durham's Hero holding up a torch and gazing across the sea, and Boehm's illustrations of Highland games, executed for the Queen, and lent by permission of her Majesty, and a Cleveland cart-horse rearing, in bronze, by the same artist, merit particular attention.

WASTE OF LABOUR IN BUILDING.

OF all the painful sights we are called upon to witness in this day of steam engines, and and labour-saving appliances, none strikes us as being so absurd and unnecessary as the waste of human toil in building as it is generally conducted. Hodmen crawling up long ladders with small burdens of bricks and mortar, carrying at each trip some sixty or seventy pounds of building material, with thirty or forty pounds of hod, and one hundred and sixty or more of flesh and blood—not to mention beer—seems something so foreign to this age of machinery that we should scarcely feel it more incongrous to see the stocks and pillories restored to our market-places. If a huge beam or girder is to be raised, we see the crane, tackle, and steam engine employed, but the ordinary carrying is done by human legs. These legs, although they can do climbing passably, are certainly inferior in this respect to other legs designed by nature to make climbing a speciality. A ladder is a very serviceable appliance in its way; we, however, believe it to be as hard a road to travel as ever the genius of man devised. The hod belongs to an ancient and honorable family of implements, but it does not seem the most agreeable companion in the world to clasp in affectionate embrace or place one's cheek fondly against. Therefore, we say, down with the hod; let it take its place with the host of implements on the tomb of which modern progress has written the epitaph—"Played Out." Let us suppose the two side pieces of a ladder to be replaced by iron rails and the rounds by ties, and let us suppose some genius to conceive the happy idea of causing a locomotive to crawl tediously up this heavy grade, drawing after it a load of one third its own weight. What gibings, what laughter, what derision would such a scheme excite among mechanics? Yet we are importing annually large numbers of locomotives to do the same thing; only these locomotives run on the ties instead of the rails. They do these things better in France. Either derricks are employed or the brick and mortar carriers are used as stationary engines, rather than as locomotives. In passing a building in process of erection in Paris, one may often see a number of men stationed one above the other along a ladder, each of whom passes his load to the next above him, until the load reaches its destination. In this way a continuous procession of materials is kept up, and a large quantity may be elevated in a short time. This is an improvement on the climbing process, but there must even in this way be an enormous waste of power. And this waste is not only useless, but so easily avoided, that the continuance of the employment of human power to perform such rude work, is a disgrace to modern civilization. It can be demonstrated that a small one-horse power engine, with suitable tackle, and the employment of a single man to attend it, will do the work of six men at elevating bricks and mortar, at a cost of less than the wages of two men. No mechanic who reads this will fail to see many ways in which this application of steam power could be advantageously made. The ladder might be replaced by a railway up and along which a car-load of bricks or mortar might be made to roll, which track might be joined to and made continuous with a horizontal track, by means of an easy curve at the summit, the whole being adjustable to suit the progressive heights of the wall as they advance towards completion. It would require little genius to adjust the detail, and the cost of building would be greatly lessened by dispensing with the hod carriers.

A SANITARY PROSECUTION.

THE PUBLIC HEALTH COMMITTEE *v.* ECKFORD.

THIS was a prosecution at the instance of the Public Health Committee against Mr. A. J. Eckford, of Seville-place, in this city.

Mr. John Norwood, LL.D., instructed by Mr. Edward A. Ennis, was on behalf of the committee; and Mr. Geo. Perry, instructed by Messrs. Casey and Clay, was on the part of the defendant.

Mr. Norwood, in stating the case, said the prosecution was brought under the 18th and 19th Vic., cap. 121, sec. 27. Defendant was the proprietor of an artificial manure manuactory at Seville-place, and the nuisance complained of was caused by the unwholesome effluvium emitted in the process of compounding sulphuric acid and calcined bones on defendant's premises. The manufactory had only been in operation two or three months, so that the residents had taken the earliest opportunity of bringing the nuisance under the attention of the authorities. So offensive and pestilential had it become that a memorial had been numerously signed by the persons living in the neighbourhood praying for the abatement of the nuisance. That memorial stated that the fumes emitted from defendant's works were of a most sickening and poisonous character, and not only injurious to health, but destructive to property. The flue attached to the defendant's manufactory was totally inadequate for the purpose of conveying the fumes above the level of the houses. It appeared that other works of the same character were in the city, and had adopted such means as were adequate for preventing any nuisance. Counsel submitted that the case was one which would be laid before his worship in detail, and one in which he thought his worship ought to order an abatement of the nuisance complained of, or that the premises should be closed up altogether.

Drs. Mapother and Cameron, Mr. Boyle, C.E., Mr. Wm. Meagher, T.C., and police-sergeant 51 C deposed as to the existence of the nuisance complained of, and also to the injurious effects of it on the inhabitants of the locality.

Mr. Perry (on behalf of defendant) submitted that the summons should be dismissed, as the prosecutors had not complied with the section of the Act which provided that they should show that they were authorised by the Public Health Committee to bring the prosecution. Counsel read correspondence between the Corporation and the defendant in reference to this subject, and in that the defendant stated his willingness to endeavour to prevent the nuisance; also that he had obtained a report concerning it from Professor Galloway, who believed that, although the effluvium was unpleasant, it was innocuous.

Professor Galloway was then examined for the defence, and stated that he had recommended certain changes for the prevention of the unpleasant fumes, and these recommendations had, as far as was possible in so short a time, been adopted by defendant. He had recommended the fumes to be carried through a chimney as a means of decreasing the unpleasant smell. As to the evidence he had heard in court, it would not be dared to be stated in any scientific journal.

Dr. Cameron said he would wish to know to whom did Professor Galloway refer in his last observation. He would not ask, only Dr. Mapother was not present.

Mr. Clay—We don't want any squabble here. You can carry it on in any scientific journal you please.

Professor Galloway then proceeded to state that he considered the nuisance was very slight, as he thought that in calcined bones there could not be any organic matter left to give out any injurious gases.

Mr. Norwood—Then you contradict the 48 memorialists and the medical and other witnesses examined here?

Professor Galloway—I have nothing to do with them: I am simply giving my evidence.

Mr. Norwood—Assuming the nausea is produced, is that injurious to health?

Witness—I don't know anything about that.

After some discussion the magistrate said he thought as defendant appeared to have adopted the suggestion of Professor Galloway, and had endeavoured to abate the nuisance, it would perhaps lead to an arrangement if the case were allowed to stand over for a month, work being suspended in defendant's manufactory in the meantime, and until some precaution had been taken to abate the nuisance. At the request of Mr. Perry, a week was allowed the defendant to complete the orders at present in course of execution at his works.

MISCELLANEOUS.

IRON CHIMNEYS.—A wrought-iron chimney, 196 ft. high and 6 ft. 7 in. in diameter has just been erected in Pittsburg. Another is to be put up 275 ft. high. The first was rivetted togeter in a horizontal position, and then lifted to the perpendicular by a crane. The other will be made upright; the plates will be rivetted by means of a scaffolding running up inside.

CROQUET-MARKERS.—Mr. L. F. Banks, of the Royal Hospital, Kilmainham, Dublin, has recently devised and patented a novelty in croquet-markers. The markers are constructed in the form of a small tablet of ivory, or other suitable material, and are intended to be worn upon the person of each player, such tablet containing a miniature diagram of the "game," viz. the *direct* course of a ball from the starting peg to the winning peg, the positions of the hoops and pegs being indicated by holes made in the tablet in corresponding positions. Or a diagram of one half the "game" may be made on each side of the tablet. A small marking peg or pin, which may be of the colour of the player's croquet ball, is attached by a thread or fine chain to the tablet, such pin being composed by preference of whalebone, gutta-percha or some slightly elastic material, so that, when inserted into any one of the holes in the tablet, it will remain secure therein. Should the player be playing two balls. then an additional pin of corresponding colour to the second ball will be employed. Arrows are marked on the tablets indicating the direction of the course of the player to and from the winning and starting pegs. In lieu of pins a slide or slides may be employed, or a hand or indicator used moving along the face or faces of the tablet, as required; or an adjustable sliding clip may fitted on to the edge of the tablet with a raised stud in it, which drops into the different holes in the tablet. These tablets may be made small enongh to be worn as "charms" on the watch chain if desired.

A NOVELTY IN BUTTER MAKING.—A singular method of making butter has recently come into rather extensive use in France, based upon the fact that cream is changed into butter by being simply buried in the earth. The theory of this result is not very intelligible, though the fact is stated to be beyond question; and in Normandy and other parts of France butter is prepared on a large scale this way. The process consists in placing the cream in a linen bag of moderate thickness, which is carefully closed; then burying the bag about a foot and a-half deep in the earth, and allowing it to remain from twenty-four to twenty-five hours. After the expiration of this period, the cream is found to have become hard, and it is then broken up by means of a wooden beater into small pieces, and sufficient water poured in to wash out the buttermilk. To prevent any mixture of earth, it is advisable to enclose the bag in a second one of larger size and coarser quality. This method of making butter saves a good deal of labour, and separates the butter more perfectly than the ordinary process; and it is said that butter thus prepared is of a more excellent quality.—*Grocer*.

HARBOUR ACCOUNTS.—Mr. Bolckow, M.P., has obtained a return of the accounts of the several harbour authorities of Great Britain and Ireland showing the receipts and expenditure of each harbour for twelve months preceding June, 1869, and the amount of bonded or secured debt remaining at the date of the return. This information will be most acceptable at the present time as the various harbour authorities are agitating for a Bill to enable the Exchequer Loan Company to advance money to them on easy terms for the paying off of existing debts as well as carrying on works.

The ratepayers of Kingstown have been mulcted in the sum of £159 for law costs in defending an action for injuries sustained by a man through falling into a sewer which had been under repairs and which had not been properly protected by the officials of the Township Commissioners.

Mr. A. M. Sullivan, T.C., has given notice that at the next meeting of the Corporation Committee No. 1, he will move that a steam road roller be provided for the city, at a cost not exceeding £1,000.

John V. Hogan, son of the late eminent sculptor, has arrived in town from Rome. He will occupy his father's studio at Wentworth-place.

The forty-first annual exhibition of the Royal Hibernian Academy of Arts will open on Thursday next, the 17th inst.

At the Observatory of the Ordnance Survey Office, Phœnix Park, the mean height of the barometer during the week was 29·706 inches. The highest daily mean reading (30·333) occurred on Saturday, the lowest (29·235) on Sunday. The mean temperature during the week was 41·4 deg. (the average in the corresponding week of the previous six years was 41·2); the lowest daily mean (37·5) occurred on Thursday; the highest (46·2) on Tuesday. The temperature was highest on Tuesday, when the thermometer registered 55·0 deg., and was lowest on Saturday, the mercury having fallen to 31·5 deg. The highest reading of the barometer during the week (30·222) occurred on Saturday, at 9.30 p.m., the air being calm; the lowest (28·914) on Sunday, at 9.30 p.m., wind S.E. The mean of the dry bulb for the week was 41·9 deg.; and of the wet bulb 39·5 deg. The mean humidity of the air was ·826—complete saturation being represented by 1·0. The rain-fall during the week measured 1·532 in. At Greenwich, the mean temperature of the week was 45·8; at Glasgow, 38.9; and at Edinburgh, 38·0 degs. The rain-fall at Greenwich during the week measured 1·22 in.; at Glasgow, 2·85 in.; and at Edinburgh, ·80 in.

NEW LIGHTHOUSE APPARATUS.—In the Lochindaal Lighthouse, on the Island of Islay, Argyllshire, which was exhibited for the first time on the 15th inst., Messrs. Stevenson, the engineers to the Northern Lighthouses, have introduced dioptric prisms of a new form. The following will sufficiently explain their nature:—The light which passes behind the flame hitherto has been sent forward by two optical agents, so as to mingle with the front light, and thus to reach the eye of the mariner; but the object is now effected for part of the upper cone of rays by means of the new prisms alone, so that one agent is saved, and the loss of light by absorption and superficial reflection is prevented. The prisms act by refraction and total reflection, and they consist of glass of the ordinary index of refraction. By means of these prisms, and a spherical mirror, the whole of the back light is sent forward. There can be no doubt that the Lochindaal prisms will come into general use in lighthouse illunination, the more so as they can be modified in various ways to suit the requirements of different localities.

The Grand Central Hotel now erecting in New York will be the largest in America. The total cost will not be less than two million dollars. It will contain seven hundred rooms, fifteen hundred windows, two thousand doors, fifty corridors, and seven acres of carpeting,—furnishing accommodation for two thousand guests.

THE HEALTH OF DUBLIN.—In the Dublin registration district the births registered during the week ending March 5th, amounted to 177. The average number in the corresponding week of the years 1864 to '69 inclusive, was 189. The deaths registered during the week were 181. The average number in the corresponding week of the previous six years was 179. Scarlet fever proved fatal in 5 instances, against 8 in the preceeding week. Eight deaths were caused by fever, viz., 2 by typhus, 3 by typhoid or enteric fever, and 3 by simple continued fever. Four deaths resulted from croup, 1 from whooping cough, and 1 from measles. Erysipelas caused 4 deaths, 3 deaths were referred to diarrhœa. Eight children were carried off by convulsions. Bronchitis was the cause of 38 deaths, and 1 from pneumonia or inflammation of the lungs. Disease of the heart caused 9 deaths, and 1 from aneurism. Three death were caused by apoplexy, paralysis caused 5 deaths. Two deaths were referred to liver disease, 3 to kidney disease, and 1 to nephria or Bright's disease. Six accidental deaths were registered—viz., 1 by fractures and contusions, 2 by burns, 2 by drowning, and 1 by suffocation. A female died in Church-lane at (as stated) the advanced age of 97 years.

MODERN CUSTOMS.—Presentations and Testimonia's are largely on the increase; this modern custom appears to extend to almost every household, for no auspicious event is allowed to pass without its being marked by some pleasing souvenir; Birthdays, Christenings, Marriages, the seasons of the year, such as Christmas, New Year, &c., invariably receive special commemoration. The attention of one of the great London Manufacturers, Mr. J. W. BENSON, of 25, Old Bond Street, and of the City Steam Factory, Ludgate Hill, has been directed to this subject. With the view of giving more artistic effect to this custom of society, he has published a most interesting Illustrated Historical Pamphlet upon Watches and Clocks, also one upon artistic Gold Jewellery, Silver and Electro-plate; all are profusely illustrated with choice designs, and are sent post free for 2d. each, thus bringing within the reach of those who live even thousands of miles away from London, one of the largest and most artistic collections which can be seen in any part of the world; and, if necessary, designs are prepared to illustrate any special case.

The Irish Builder.

Vol. XII.—No. 247.

Carlisle Bridge.

IN years gone by we had here in Dublin a board of commissioners who, during the comparatively short period of their existence, effected an amount of improvement in our thoroughfares which, proportionately viewed according to population and resources, has never been surpassed by any city in Europe. These were the Wide Street Commissioners, originally appointed in 1757 by a special Act of the Irish Parliament for the purpose of making a wide, convenient way or street from Essex Bridge to the Castle. Their powers were subsequently continued by successive Acts up to the period of the Union and afterwards, until eventually they became vested in the present Corporation, where they now remain unused.

We will enumerate these improvements in order to shew how much can be done by an efficient body, aided by a little Government assistance; as whenever a project of real importance was demanded by the increasing traffic of the city, the Wide Street Commissioners immediately memorialized the Irish Parliament, and a reasonable grant in aid was given them.

In 1762 their first great improvement was effected by the opening of Parliament-street, previously occupied by narrow lanes. In 1786, Dame-street, from the Exchange to Palace-street, and Cork-hill to the Castle gate, were considerably widened and improved, and several buildings removed on the quays westward of Essex Bridge. In 1777, Castle Market, which formerly stood in the upper end of Dame-street, extending from the Castle gate to George's-lane, was removed, the present line of street formed, and George's-lane (now South Great George's-street) widened. From 1784 to 1798 they opened Lower Abbey-street from the present Sackville-street to the Custom House, and formed Beresford-place, all which was then covered by glass houses and other buildings. Foster-place was formed, the road from Barrack-street to Island Bridge was widened considerably, as also the south end of Cavendish-row and North Frederick-street; but by far their greatest work was opening Sackville-street from Henry-street to Carlisle Bridge on the north side, and forming Westmoreland and D'Olier-streets on the south. They afterwards widened James'-gate, removed the old market-house in Thomas-street, widened Bridgefoot-street and Cutpurse-row, removed Skinners'-row (now Christ Church-place), opened the quays both sides of the river north and south of Carlisle Bridge, widened another portion of Dame-street and the entire of the upper end of Grafton-street, and had numerous other equally desirable plans in contemplation.

At the present time there are several improvements of paramount importance, which safety for human life and common humanity demand. We shall but instance two—one of them the opening of Castle-street to Christ Church-place, where, if there were no other reason, the cruelties practised hourly upon unfortunate horses should be some inducement; the other is Carlisle Bridge, which has become altogether unequal to the present traffic of seven great thoroughfares which lead to it. The Corporation some time since made a stir in the matter, and advertised for plans, &c., but we believe they were all far too costly to be seriously entertained. The quay walls at either side of the bridge—particularly that portion facing Eden-quay—are at present in a dangerous position, and it is only a question of time or of heavy floods, which may occur at any time, that they will have to be rebuilt. Making application to Government would be useless: it costs too much to embellish London. They care nothing for Dublin, although there is no reason why a united parliament should not do what an Irish parliament sitting in College-green assuredly would do. If we are not misinformed, our Port and Harbour Board transmitted to London, a few years since, a sum equivalent to the building of the costliest bridge in Europe, being an accumulated surplus of their light and harbour dues, because there was nothing in connexion with the port and harbour upon which they could legally expend it. Why not apply to have this sum refunded? Little more than a fourth of it would do all that is necessary for the improvement of Carlisle Bridge. We do not need to have it rebuilt; the present structure, with a little alteration, will last for centuries. It requires but adding to its width at either side, so that it shall be the full breadth of Sackville-street. We have recently noticed a plan, with an accompanying model, for this purpose by Mr. Charles Geoghegan, C.E., which combines all that is needful, and which consists of extension east and west by means of cast-iron arches supporting a uniform level roadway resting upon massive lateral and transverse girders, also of cast-iron, which we are assured can be fully completed within twelve months, at an outside cost of £29,000. A description of the mode of operation by which the proposed extensions are to be carried out may not be uninteresting.

The present bridge is to remain undisturbed for traffic during the entire time the extensions are in progress, which, it is intended, shall be effected as follows:—Hollow cylindrical cast-iron piers to be sunk in sections parallel to each of the present piers, allowing them in the first instance to find as deep a bed as their own weight can effect; the joints being then made water-tight, caps with self-closing air-tight trap doors are securely screwed down upon the top of each of the cylinders, leaving the entire space within for the action of excavators. A portable engine is employed, which propels air into the cylinder, forcing the water within to descend until the workmen are enabled to reach the bed of the river, on which they commence to excavate, hoisting up their excavation by chain buckets passing through the above-mentioned self-closing traps, which prevent the escape of air while allowing each bucket to pass through and be emptied in rotation. The men thus working in the bottom are well supplied with air under pressure, without the expense or risk of coffer-dams or pumping. As the excavation proceeds the cylinders gradually subside, and reach a secure foundation. When this has been obtained, cement concrete is filled in from above, forming a solid pier encased in cast iron, the diameter of each being less than the width of old piers. They do not in any way diminish the water way. The bearing girders will rest upon these cylinders, extending from them to the haunches of the arches of present bridge, and from the supports from which the arched ribs spring, diminishing in depth as they reach the crown of the old arches, leaving the underside of each level throughout. On these arched ribs the roadway girders are laid, having buckle-plates of iron on top, forming a footing for the metalling or paving of roadway. No portion of the old stone arches will need to be disturbed, except the immediate crown of central arch, for each arch-course of which a cast-iron rib will be substituted of much less depth than the stone courses, in order that the gas and water mains may be laid in the depth of the rib itself, thus allowing the highest point of the crown to be reduced to a perfect level with the approaches at either side. By this mode of construction the present bridge will be relieved of a large amount of useless weight in the reduction of roadway; and the retaining quay walls, which are now unsafe, will be preserved by the abutment ribs of the proposed extensions.

In an architectural point of view, Mr. Geoghegan's plan and model present many highly artistic features in its ornamental façades and ballustrading towards the river, with a roadway the full breadth of lower Sackville-street, combining all the requirements necessary for the increasing traffic of Dublin; and, considering the durable nature of the materials of which it is proposed to be constructed, the estimated cost appears to be moderate, and we hope to see it or some equally effective project realized at no distant day. As a matter of right, we should claim the sum before alluded to, which we believe amounted to close upon £100,000; because, if an Irish parliament had been continued, it never would have been devoted to Imperial purposes, but applied to its natural uses—the improvement of the rivers, the ports, and the harbours of Ireland. We have at present ample use for it in the much-needed purification of the Liffey, and providing for the convenience of traffic over it.

With this number we give an illustration of the plan submitted by Mr. Charles Geoghegan, C.E.

[We have to complain of a want of courtesy on the part of the *Irish Times*. The above paper upon Carlisle Bridge was written by a gentleman who largely contributes to our columns, MSS. of which were forwarded to us, as well as to our contemporary, on the understanding that they should appear simultaneously. The publication of the Irish Builder being fortnightly, our friends in Abbey-street have been enabled to get the start of us by a couple of days.—Ed. I. B.]

DAMP WALLS IN A FEVER HOSPITAL.

The condition of the walls of the Fever Hospital, Coleraine, having been brought before the guardians at a recent meeting, it was resolved that two architects should examine and report upon them. Having done so, they informed the guardians that they have come to the conclusion that the building has not had a sufficient quantity of mortar and hearting; they recommend that the outside receive a ¾-inch coat of Portland cement, put on by proper workmen, say in the month of June. The other alternative is to batten, and lath and plaster the walls inside.

THE PHIBSBOROUGH CHURCH CASE —DOOLIN v. DIXON.[*]

This was a builder's case, tried originally in the Irish Court of Exchequer, where, with repeated adjournments, it extended from July to the end of December, 1868—over a period of six months—having been heard in court thirty-nine days, exclusive of odd days when the Lord Chief Baron adjourned on account of the failing health of the worn-out jury, and was finally referred to the arbitration of the Chief Baron (who had heard the case in court) and his Eminence Cardinal Cullen, before whom many of the winesses were recalled, and a week spent in the investigation. The parties are respectively a firm of builders in Dublin, and the principal or administrator of a confraternity called the Mission of St. Vincent de Paul.

The facts are briefly these: In July, 1857, the Messrs. Doolin contracted with a Mr. M'Namara, the then administrator of the mission, to erect certain additions to the chapel of the community, from the plans and under the superintendence of Messrs. Weightman, Hadfield, and Goldie, of Sheffield, at certain rates of prices as detailed in a schedule attached to the contract, the conditions of which contained the usual provision for payment on the architects' certificate, and provided for the supervision of a clerk of works, both of which important conditions were ignored from the outset by Mr. M'Namara, the employer. As after a time, but not before the bulk of the work was completed—viz., in 1861,—the whole responsibility, &c., fell on Mr. Goldie, he retaining this work on a dissolution of the partnership existing at the date of the contract. I shall hereafter refer to him alone as the architect in this case. At the date of the contract the chapel of the community consisted of a western tower, a long nave with aisles, and a shallow narrow chancel at the west end—all in nearly the worst style of Irish imitation Gothic, although a great part of the work had only been recently done. The subject-matter of the contract was the erection of a small side chapel adjoining the south-west end of the old structure; but, during the progress of the work, orders were from time to time given, which resulted in the addition to the old church, at its west end, of a central tower standing on piers carrying arches, which overlapped the old chancel and were joined on the eastern side to the old walls of the nave; north and south transepts, having aisles or side chapels on the western side; a chancel ending in a multangular apse, with a continuous circle of aisles and chapels. This work may be said to have been finished, except the internal steps and flooring, and had been carried out according to drawings furnished from time to time by Mr. Goldie, and under his superintendence, on the terms of the original specification, and on the schedule of prices attached thereto. It is important to bear in mind this peculiarity of the case—1st, as not being a contract for a lump sum, but for work to be paid for on a schedule of prices which was prepared for other work of much smaller extent; and, 2nd, that the specification was similarly affected by being prepared, not for the work actually done, nor yet for any possible or probable additions, but merely for the small chapel first contemplated.

The plaintiffs brought their action in April, 1868, to recover a large balance which they claimed as due to them. This was partially resisted by the architect as being excessive in amount, and reduced by him to what he believed to be due on foot of the accounts made up by the surveyor, for which he gave his certificate. The defendant took several grounds of defence—one partly legal and technical, based on alleged non-responsibility of the existing superior or administrator for the acts of Mr. M'Namara, his predecessor in office, which was set aside. He then proceeded to repudiate the claim on the grounds that the building was not safe, and could not possibly stand; that both design and execution were faulty; that omissions of matters vital to the stability of the structure had been made contrary to the specification and contract; that improper materials and unskilful workmanship had been used by the contractor, and connived at by the architect; and the balance, even after the heavy deductions made by the architect, was incorrect and excessive; that, as before stated, things were charged for which were not done, and more set down in the account than had been supplied or executed. To dispose of this point at once, it was discovered that some things had been set down at more than, after diligent search, they were found to be; but, on the whole, the result was not such as to impugn the accuracy and scrupulousness of the measurer or the honour of the contractors, and did not amount in extent to any large fraction of the cost of discovery, the jury having assessed the amount at £25 in an account amounting to £18,000.

The defence, therefore, after disposing of the non-liability question, consisted in this—"We have got a building which is useless to us as the architect and builder have left it to us. It will not stand; it is badly designed and badly constructed. The specified workmanship and materials have not been put in. If we contracted at all, we did so for a stable, durable structure, erected in a certain manner, of certain materials. What we have got is not what we contracted for, and we will not pay for it." This plea was supported by evidence to prove the following alleged facts:—

1st. The foundations of the piers under the tower were insufficient, and not connected by walls from foundation to foundation; that the plinth of one of the piers overlapped the masonry of the foundation; that serious subsidence had taken place, and was still in progress; that the plinth or base course of the piers was fractured in consequence of this subsidence, and the mouldings of the capitals flushed off; that the work was further imperilled by not putting discharging arches over the great arches which support the tower, and that the piers, which, according to contract, should have been built of "thorough stones," were not so executed, but that the interior of them was filled with a continuous core of rubbish mixed with a little lime, which it was attempted to pass off as cement concrete; that the piers were so weakened thereby as to be unable to support the superincumbent weight; and that the failure of the plinth and cap were the commencement and evidence of the certain ruin and failure that was in progress. All this was deposed to with that sublime confidence in "hard swearing"—to use a very mild term—which so often characterizes the evidence of experts, based, no doubt, on the consciousness of security, inasmuch as no indictment for perjury will lie when a witness swears to, not facts and things, but opinions and judgments. It is an unhappy thing in such cases when the court and the jury have not sufficient knowledge of parties to be able to weigh as well as count the witnesses. I remember a case tried many years back at a northern court of assize—a case involving the character of a professional man—when two experts, well known and highly esteemed, were flatly contradicted in the coarsest manner by a third of the same calling, on a purely technical point. The judge—a pattern of decorum and quiet dignity—asked the witness if he had heard the testimony of the two gentlemen who preceded him, and did he still feel justified in the evidence he had given? and was answered, "Oh, my lord, every professional man can form his own opinion." "Then, gentlemen," said the judge, addressing the jury, "it is fortunate that, from our knowledge of the several witnesses, we are able to weigh the value of their testimony!"

To meet these allegations it became necessary for the plaintiffs to go into a rebutting case, which I may summarize as follows:—

1st. As regards the insufficiency of the foundations. This question narrowed itself to want of breadth of footing courses under two of the piers; the depth or stratum on which they rested was not called in question, nor was there any insufficiencies of size alleged against those under the two eastern piers; and a very satisfactory explanation was given to account for the smaller and apparently insufficient area of the western foundations, viz., that *no* tower was ever anticipated in the original plan, which became contract plans in July, 1857, but only what is known as a "crossing," viz., the intersection of the nave and transepts, and that the four large piers, which were simply intended to support the four arches forming this intersection, were of such area as was requisite for this task only; but that even after their foundations were built, Mr. M'Namara conceived the idea of a central tower, and only in December, 1858, the plans were put into the contractors' hands, the piers having been of course enlarged to fulfil their increased duty, enlarged so much indeed as to cause the lower portion of the base in some spots to overlap the upper course of the foundations; but Mr. Goldie and Messrs. Doolin, exercising their judgment, would not put the community to the expense of taking up the already well consolidated foundations and putting in new ones of increased size; and that they therein exercised a sound judgment was proved by the fact that all four foundations, both the alleged improper and insufficient ones, and those which were acknowledged to be proper and sufficient, had subsided equally and to the same extent, viz., about 1¼ inches.

As to the alleged impropriety of not connecting the foundations of the piers by continuous walls, it was shown that such a wall was impossible between the two eastern piers, as it would have had to have been carried out across the line of the chancel of the old church which was kept standing and still in use, and that the non-necessity of such walls was proved by the fact of the equal subsidence of all four piers, two of which had such walls, and two had not. It was further laid down as an axiom, that if each pier had a sufficient foundation of its own, it had no need of such continuous walls, and if it had not, the walls would not prevent subsidence, but would be carried down at each end with the piers.

The projection of the ashlar plinth beyond the masonry was explained in the case of the deficient size of two of the piers, partly by the fact of the foundations having been prepared for the original and smaller piers; partly by the addition of a sub-plinth, which was a new feature of detail, probably suggested to the architect by the feeling of satisfying the eye by giving greater breadth of base to the greater mass of shaft. The deficits visible in these ashlars in two places will best be treated of hereafter.

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[*] Read at Ordinary General Meeting of the Royal Institute of the Architects of Ireland, March 17th, 1870, by Mr. James H. Owen, M.A., President.

As to the subsidence, the plaintiffs' witnesses put forward the following considerations:—That all buildings must and do subside, and that the architect's duty is only to provide that this subsidence shall not be excessive in extent or unequal; that precautions were constantly taken by all architects, such as inverted arches, hollows left under long stone cills, which are all based on and justified by the acknowledged and certain fact that the building will subside; that in the present case a subsidence of the tower—a central tower standing on four piers—of 1½ inches was by no means excessive or suggestive of ulterior danger; that it was only fairly attributable to the difference in height of the tower and that of the walls abutting on its angles; and further, that all four angles had gone down equally; and that, except for the fact of some crippling and mending of courses being visible at the points of junction, there was nothing about the building which would lead a skilled, competent architect or surveyor to imagine there was any instability. One architect stated that, some five years before, happening to pass the building in company with a very leading builder, and having heard reports of the insecurity of the tower, he and his companion alighted and made diligent search inside and outside, and failed to discover anything on which such a rumour could have been based.

As to the subsidence having ceased, and the whole work come to its final rest, the witnesses were positive to demonstration—not by stating opinions, guesses, or theories, but facts and circumstances which were most convincing. They stated that the building shewed no signs of such progressive subsidence in any one of the eight walls which abut against the tower, neither did the slating of the roofs outside, nor the plastering of the ceilings inside; but, on the contrary, they gave silent but clear testimony that no such progress had taken place since the work was finished. It was explained that on all four sides, when the dislocation of window arches and string-courses had taken place, and had been made good, there was no sign of joints re-opening or any fresh dislocation; that the corners of the slating were all level, and none of the open joints and cocked-up angles were to be seen, which any further subsidence must have caused. The elaborate plastered ceilings in imitation of groining would have become a spider's web of cracks and flaws had the tower carried down with it the portion attached to it, leaving the remainder at its original level. An attempt was made on the last day of the arbitration to upset this evidence by alleging the contrary to be the fact with regard to one of the eight walls, when it was stated that a crack running through the joints of the masonry had been pointed up and had re-opened about 2 inches wide. The history of this crack may serve to exemplify the sort of evidence given in this case. As the distance was short, the Chief Baron sent up three of plaintiffs' witnesses singly to inspect the place and report their opinion, and all three independently came to the same conclusion—that this crack had never been pointed up at all, which might be accounted for by its occurring in a part of the wall which no one could see without actually going up and touching it (as the place was concealed by low buildings), and that there was every sign of the whole crack being some years old, which was confirmed by the appearance of everything about it also, and that there was no sign whatever of any increase or extension of the crack. In contradiction of this it was sworn point blank to the contrary, and an appeal made to one of plaintiffs' witnesses whether the crack was not 2 inches wide. How many a story that would otherwise pass current betrays itself by too much circumstance! The witness appealed confirmed Mr. ——'s statement as to the joint being 2 inches, or even 2½ inches, at the upper part of the course, *where a corner was broken off* one of the rough ashlars forming the facing of the wall, but that at the bottom of the same corner the opening was of the usual width of ⅜-inch or ½-inch. Such evidence needs no comment.

There were some plinth stones cracked—two cracks in one, which were evidently produced by the same cause, and one in another. These stones were not in the bottom course, which is a thin chamfered sub-plinth, nor in the principal plinth, which is of considerable depth, but in the moulded base of the face shafts and on the broached angles working from the square into the circular plan of the bases, consequently where the stone was thinnest; and some of the moulded stone caps had been crushed off, and replaced by cement worked on the stone. It was alleged that these were due to subsidence of the building. It was argued *per contra* if these cracks are due to want of sufficient support on the foundations, the failure would have shown itself in the bottom courses before it reached the one over them; and again, that mere subsidence would not account for it. All the piers have subsided to the same extent, and the motion, if fatal to one, would have been equally so to all; but that in fact no subsidence would account for the crack, but an unequal pressure, which would throw the weight more in one direction than in the other. This, however, was negatived by the piers being perfectly plumb and the base corners perfectly level. And it was further alleged that there was no necessity for going so far afield to explain a by no means uncommon accident, of the beds not being dressed perfectly true and fair (of which the Holborn Viaduct has recently afforded an example), which, when extreme pressure came on, was very likely to concentrate on a part of the stone the weight which should have been distributed over the whole of it, and the stone corrected the inequality as these had done by cracking, and so adjusting itself to its work. That some cause of very trifling extent had been in operation was plain from the fact of the crack, which was about ⅛-inch at the lower bed of the stone, not extending up all through its thickness to the upper bed. There was nothing to show what had caused the flushing of the caps of the piers; whatever the cause, it had evidently ceased to operate, as the cement substitutes were perfectly sound. As to the shafts of the columns themselves—though every effort was made to impress on the minds of the judge, jury, and arbitrators that they were defective, and they were constantly spoken of as "the crooked columns," and by one of the counsel as "the crooked towers"—as a matter of fact, with the single exception of *one* flushing in a joint of the south-west shaft, no sign of weakness or defect is visible, setting aside the holes dug into them in every direction since the case began by the defendant's experts.

The next point—and one which occupied an immense time—was that of discharging arches over the great arches of the tower. There was a clause in the specification—"Turn relieving arches over openings in cut stone"—and it was charged in a sort of confused way against both architect and builders that this was partly a fraud, as if defendant was being cheated of something which was part of plaintiffs' contract to do, and he was paid for and had not done, and partly that this was a precaution necessary for the safety and security of the tower, and the omission was fatal to its permanence. These two ideas were being constantly confused together. I unfortunately did not hear the evidence given on this point for defendant, but the rebutting evidence may be summarized as follows:—The obligation under a contract is not to be deduced from one only of the documents on which it is based, but on a fair general consideration of all which form equally effective and binding parts of it. The specification was written and made part of the contract at a time when this tower was not intended, and consequently was not included then in the contract; it was imported afterwards by means of the plans given specially for carrying it out, and that general clause of a long antecedent specification must be interpreted by the light of the drawings given for the work. These, first, do not show any relieving arches under the tower; which, as the drawings enter into very careful and minute details about all other matters, was an extraordinary omission, had they been intended by the architect. Secondly, the drawings show constructive details which are incompatible with the construction of relieving arches, such as a stone string course crossing above the arch just through the middle of the space in the wall which the relieving arch would occupy if intended. Third, they show, by the section given of the cut stone, that it was the intention of the architect to make the visible cut stone strong enough to bear the superincumbent weight without the assistance of concealed relieving arches; and, lastly, that such relieving arches would have not merely been useless, but most dangerous to the stability of the building, by discharging the weight of the tower outside the centre of gravity of the piers. I do not think it occurred to any one to call attention to the absurdity of pressing a clause which was most suitable and proper in reference to openings which were to be filled in with tracery into the service of a totally different state of things. One cannot help asking one's self the question—"Was this only ignorance on the part of defendant's professional advisers and witnesses?"

Another matter which occupied day after day and was dismissed and gone back upon till one was certain that everything that could be said upon it had been said at least a dozen times, until, in the very last hour of the last day of the arbitration, a new witness threw a new and strange light on it. "The piers, not being built solid," quoth he, "have caused the cracks in the plinth!" "But surely," rejoined the Chief Baron, "if the weakness is in the shafts of these piers or pillars, the failure should appear there also!" to which the witness preserved a discreet silence.

This point of the piers presented itself under several aspects, and it will be convenient to report them and the proceedings and arguments on them separately, viz., 1st, the violation of contract; 2nd, an overcharge made by the builder and connived at by the architect and measurer; and 3rd, prejudice to the stability of the building.

1st, violation of contract. The clause of the specification was urged which directs "the piers, responds, and arches to be entirely of ashlar 3 feet bed;" and the question was confidently asked, whether these tower piers were built in conformity with that clasuse. Of course the fact was acknowledged that they were not so built, but it was pleaded that the specification was only a part, not the whole contract, and that the drawings of the tower were directly at variance with it as regarded the arches, the section of which distinctly showed a filling of ordinary walling material between the external facing rings of ashlar, and that therefore the only obligation of the clause was that sufficiently solid and heavy stones should be used, filling the voids in each course with other material of less cost, of which saving the community received the benefit. It was further explained that, as a good many stones had been prepared before the enlargement of the piers was decided on, a most unnecessary waste and expense would have been incurred if they had all been rejected, which must have been the case if that clause of the specification had been literally carried out.

2nd. The two western piers having been constructed to some extent of ashlar prepared for the smaller piers, it was known that there was a certain amount of hearting in them which was charged for in the account as being of brick in cement, but the two eastern were charged, as the surveyor stated on the contractors' representation, the work being done at the time of the measurement as if of solid stone throughout. As each of these piers was afterwards pierced with four or five holes, averaging 9 inches or 10 inches by 5 in. or 6 in. into its very heart, it was discovered that the two eastern piers were also hearted: and this was paraded as a gross fraud, and it was more than hinted that the measurer connived at it, and the architect also—a charge which only elicited contempt for the persons who could make it; but it was a most unfortunate and damaging fact, unimportant in amount or bearing, but just sufficient to throw a false and suspicious air over the account. It was further stated that the hearting was not brick in cement or cement concrete at all, but merely any rubbish that lay to hand, with a little mortar or cement through it; and paper bags of a substance, half dust, half grit of some sort, were produced in court—evidence of a very taking nature, until one thought for a moment what would be the produce of breaking into a mass in the heart of a pier, and one could not fail to see that the concrete must be reduced to sand in the process—a reflection which was confirmed by subsequent examination of the holes.

The 3rd point raised and urged very strongly was that the building was rendered insecure by this hearting, which was represented not as a mere filling up at the back of the stones in each course, overlapping in the courses, nearly disappearing in some and coinciding in none, but a continuous internal column of the rotten stuff which they described, reducing the piers to a mere external skin of cut stone. I have stated the objection more broadly than it was ever urged in so many words; but this was undoubtedly the idea which they endeavoured to convey to the jury. In reply to this it was sworn as a matter of fact that every one of the numerous holes opened in the piers disclosed a totally opposite state of things—that at every one of them it was to be seen that the piers were built of very large stones, tailing far in so as to overlap the hearting in most cases, and break into its alleged continuity, and only so far hearted as the necessities of the case required, and that for all practical purposes of strength and durability they might be considered as solid; and that the external face of the courses, where no openings had been made, showed stones of the same character; and that the idea of a central shaft of hearting, continuous from base to capital, was an absurd impossibility.

Such are the principal points of this extraordinary trial, on which thousands were lavished primarily through the ill advice of the rev. defendant's experts, of the nature of which sufficient samples have been given, but whose pertinacity and zeal were worthy of a better cause; certainly no men could have gone farther than they did in endeavouring to bring about the realization of their own prophecies and opinions, for no building was ever so rooted at about its foundations and pierced in all sorts of tender places; but it stands, and will stand for many a long year as a monument of what professional witnesses will take solemn oaths to.

Secondarily, an open court and a jury are the most unsatisfactory tribunal that such a case can be brought before. The question of liability was the only one that was really and properly one for the court. Three architects would in half a day have disposed of all the questions but that of the amount to be paid, and an independent measurer—I mean one, then for the first time imported into the case, going over the building with the surveyor who had originally taken the measurements—would in one week have checked the account with sufficient accuracy to enable the architects to give a satisfactory award, which probably would have been very much the same as was certified by Mr. Goldie, and approved by the jury without having the expense, and wear and tear, and heart burnings inseparable on such a monster record when tried in court.

To architects this case will serve to "point a moral" in illustrating the mischievous results of allowing a client to tamper with and override a contract, and incessantly to alter and change accepted plans. Had Mr. Goldie with his partners insisted on the employment of a clerk of works, who only remained a mythical personage in the conditions of contract, great anxiety, loss of time, and vexation would have been spared to him. In the same way Mr. M'Námara's private arrangement with the contractors to advance money to them without certificates from the architect was the primary source of the final dispute on the amount due. Finally, nothing can be more unfair to an architect than for a client to call for constant alterations in plans; and to such an extent had this been done, that out of the immense mass of drawings which encumbered the table of the court, and were the subject of short passages of arms between the solicitors of the opposing parties and wonderful architectural elucidations by some of the experts, none, as was stated by Mr. Goldie in the course of his examination, exactly illustrated the building as it stood. Of course an architect is a good deal to blame for yielding to this extent to the dilettanteism of a client; and had Mr. Goldie withstood Mr. M'Namara's exuberant architectural propositions, he would have saved himself no little trouble and care of a most thankless description. At the same time, the position of architects with their clients is a difficult one in these days of pretentious assumption of knowledge and taste in art on the part of those who are absolutely least entitled to the least consideration on such subjects. A higher tone amongst professors of our noble art, a wider and more liberal view of its dignity, a more enlarged and earnest study of its principles and its history, will do more to raise us above such ignorant interference and insolent patronage than any other means; and such is the essence I distil for the benefit of the younger members of the profession from the dry bones of the famous case of DOOLIN *v.* DIXON.

THE CHURCH AND MONASTIC BUILDINGS OF GREY ABBEY, CO. DOWN.

THE remains of the church and monastery of Grey Abbey are situated about seven miles from Newtownards, in the Co. Down. They stand in the demesne of J. Montgomery, Esq. (whose family burying place is in the nave), who takes an especial interest in the buildings, as shewn by the care with which they are guarded from injury.

One of the principal objects of interest in the church is the fine west door of the nave, which is a good specimen of Early English work. The caps and bases are much weatherworn, but the mouldings of the arch are quite perfect. The west door of south transept also belongs to the same date. The doors on the north and south sides of nave appear to be much earlier than the rest of the work; they are built of the same material, which is a red sandstone, and the general material of the walls is limestone.

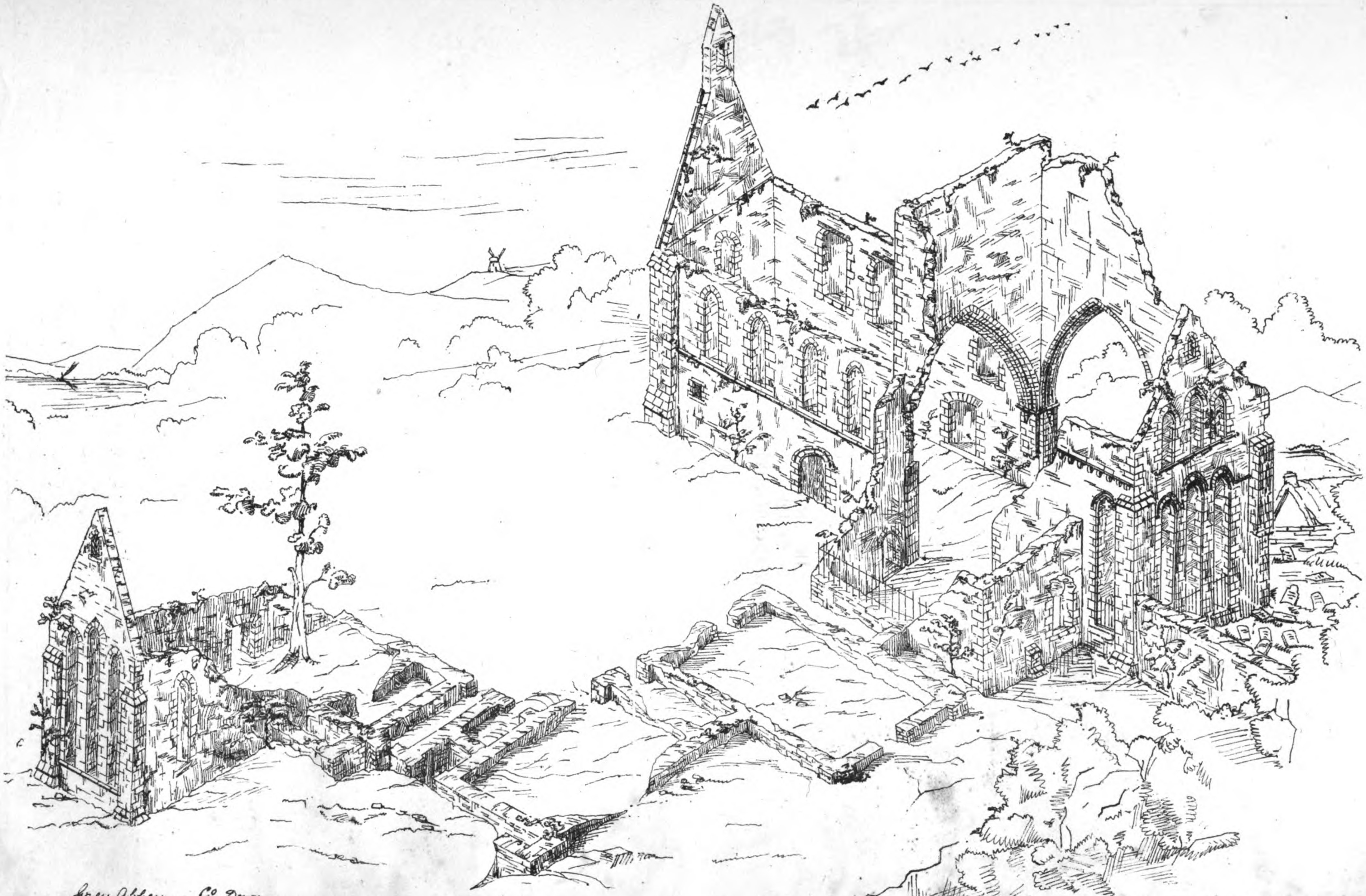
The remains of a cap and two stones, forming a label on the south elevation, would appear as if a door had formerly occupied that position, although it must have been a remarkably small one, and there is no break or traces in the masonry that would make it appear as if it had been built up, but the fact of its position being so close to the holy water stoup would favour the idea that it had been a door.

In the north and south windows of chancel are the remains of tracery, but there is such a small portion left that it would be impossible to form an idea as to date, except that in every other respect they correspond with the two side lights of triplet of chancel.

The windows of nave are interesting on account of the wooden lintels with which they are covered; it appears as if it was found that the arch on the inside would rise too high to suit the position intended for the roof, so, after working it for about 18 inches above the springing, they compromised matters as described, and laid a course of masonry on the lintels which, though very much decayed, still answer their purpose. The sides are splayed as in windows of chancel, but, unlike them, have no jamb and arch moulding on the inside. The small window in west gable appears to be the most modern piece of cut stone work in the whole building. There is no attempt to make it correspond with the rest of the work, although it may shew more skill in the way it is finished internally. The window of chapel of south transept evidently corresponded with that on the north side, but it has been much broken away, and the jambs and head have been re-pointed to protect it from further injury. There are no traces of a window in the south chapel of south transept.

There is a stone in the north wall of nave which appears to have once formed the semicircular head of a small window, but whether it was ever used as a window in its present position or not seems to be an open question.

The piscina in chancel appears as if it had never been very highly finished; the caps



Grey Abbey – Co Down –

Measured, drawn + lith'd by Thomas Collot S.R.I.A.I.

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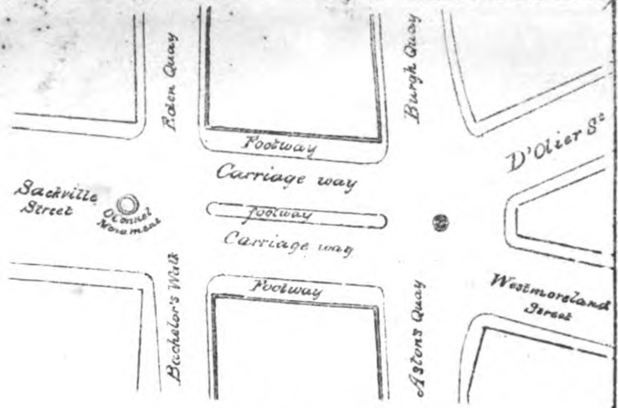
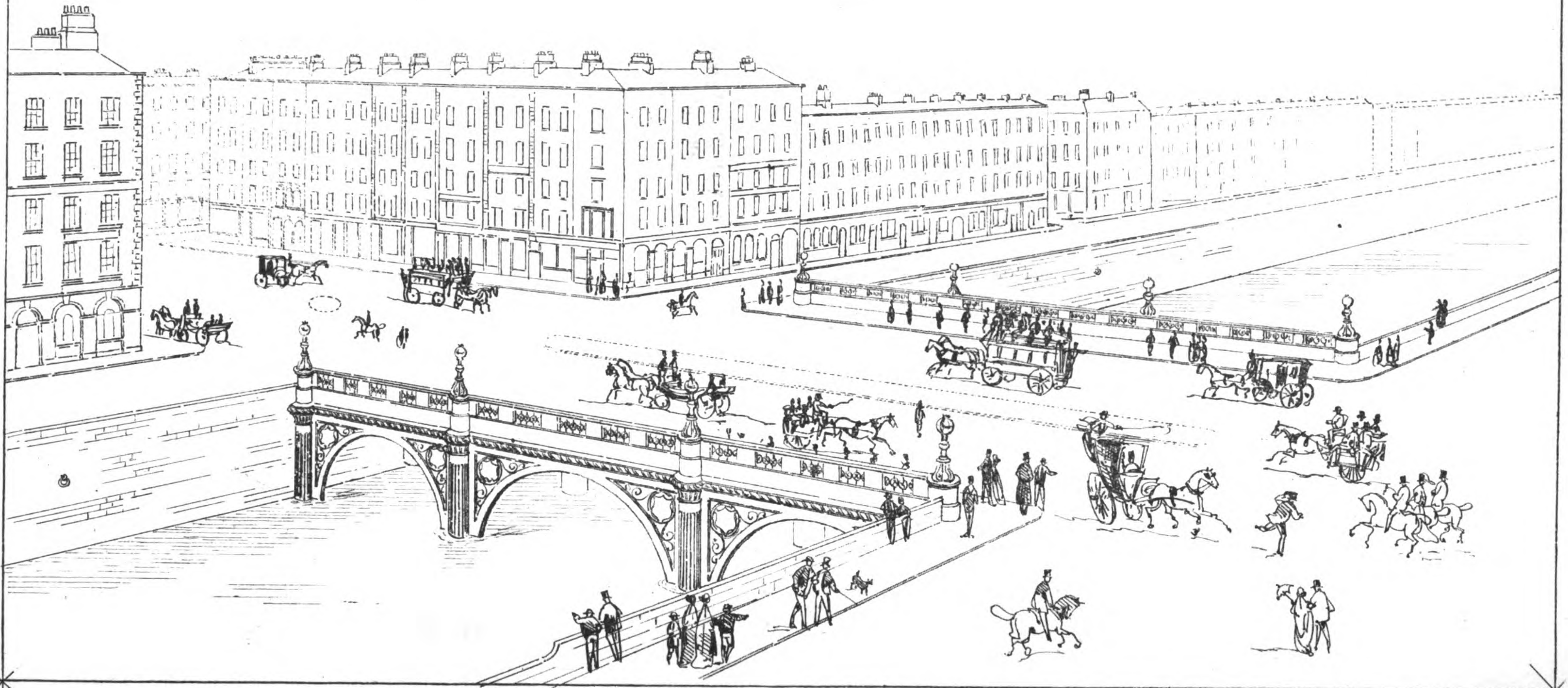


PLAN



PLAN FOR WIDENING AND LOWERING CARLISLE BRIDGE CHAS. GEOGHEGAN ARCHT.

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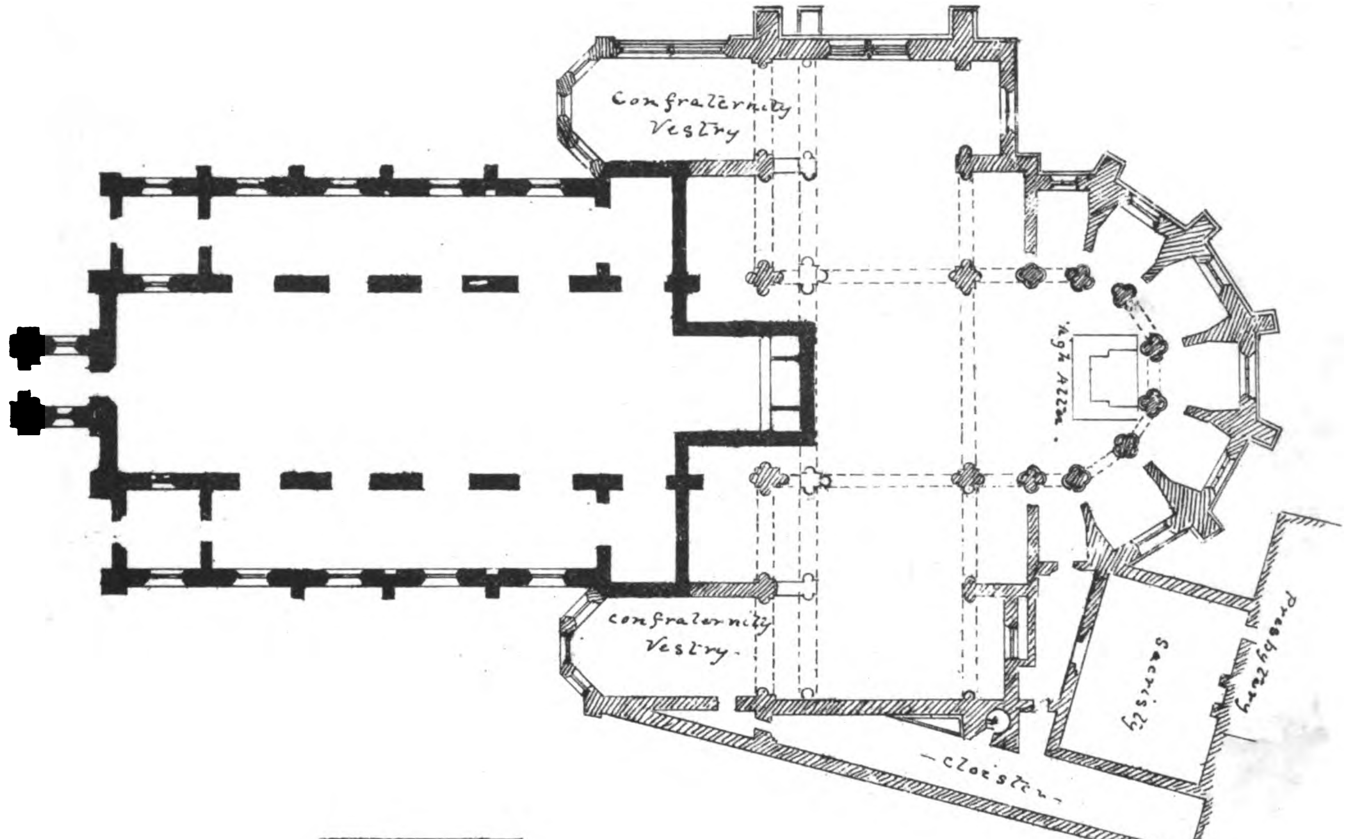

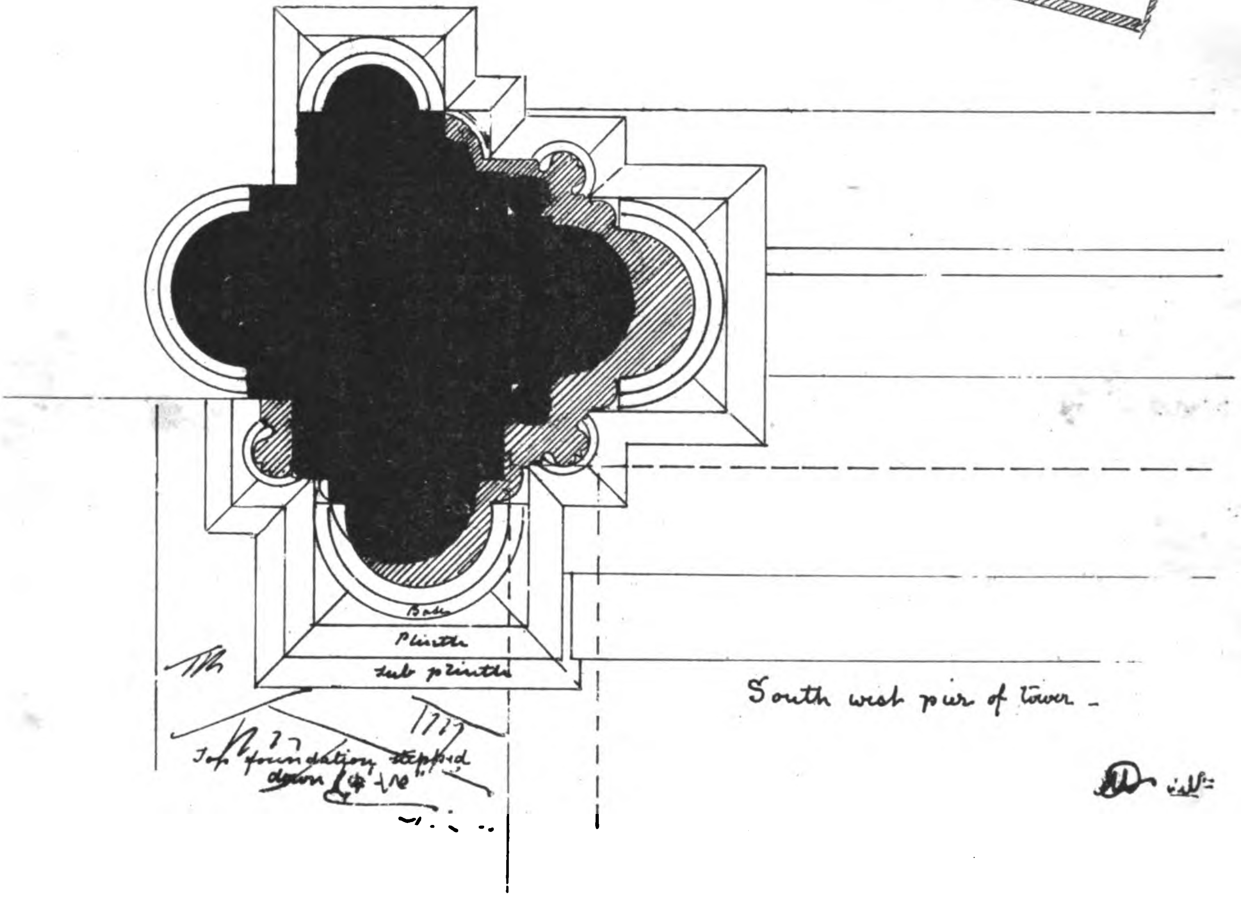

South west pier of tower.

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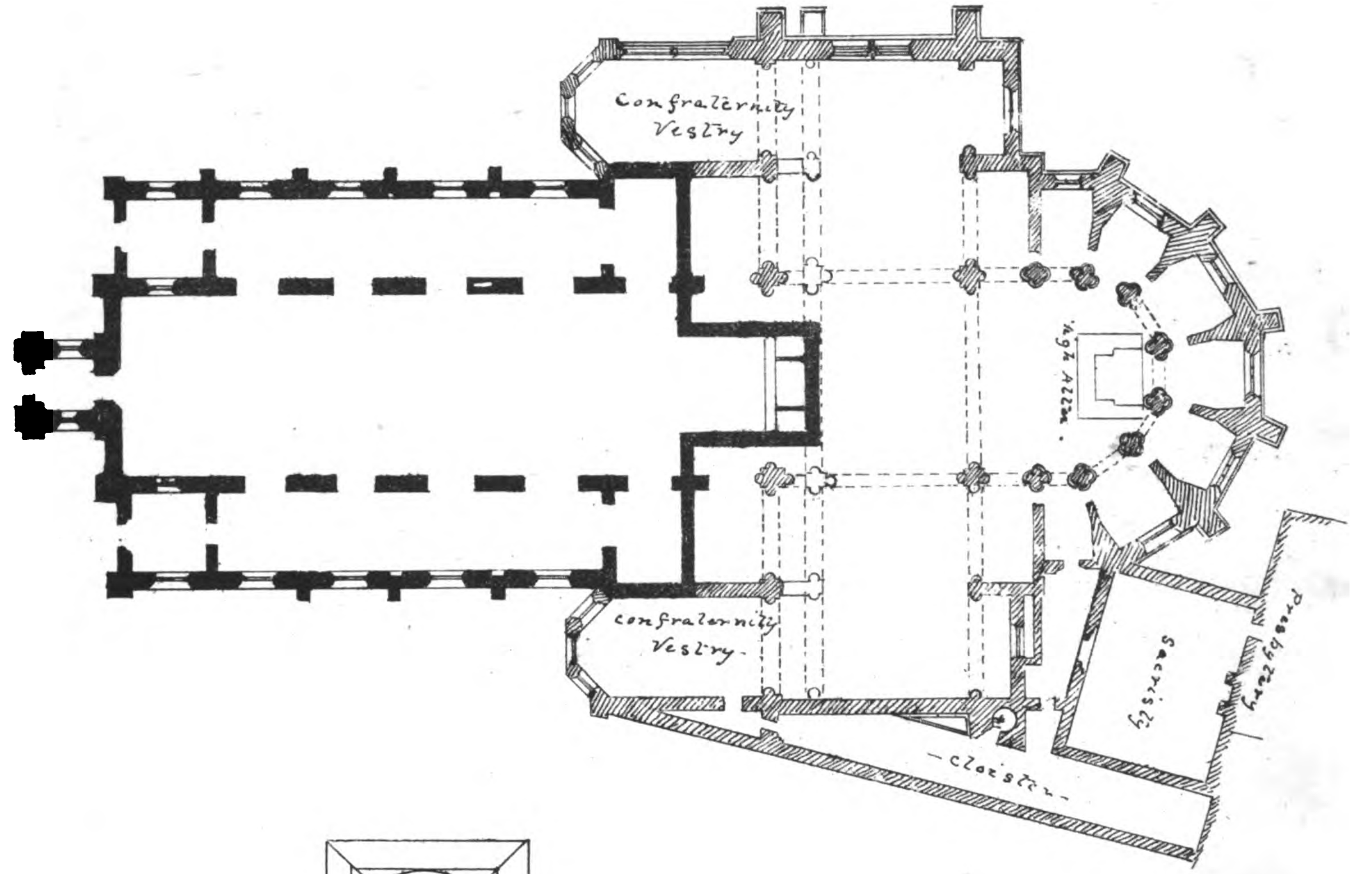

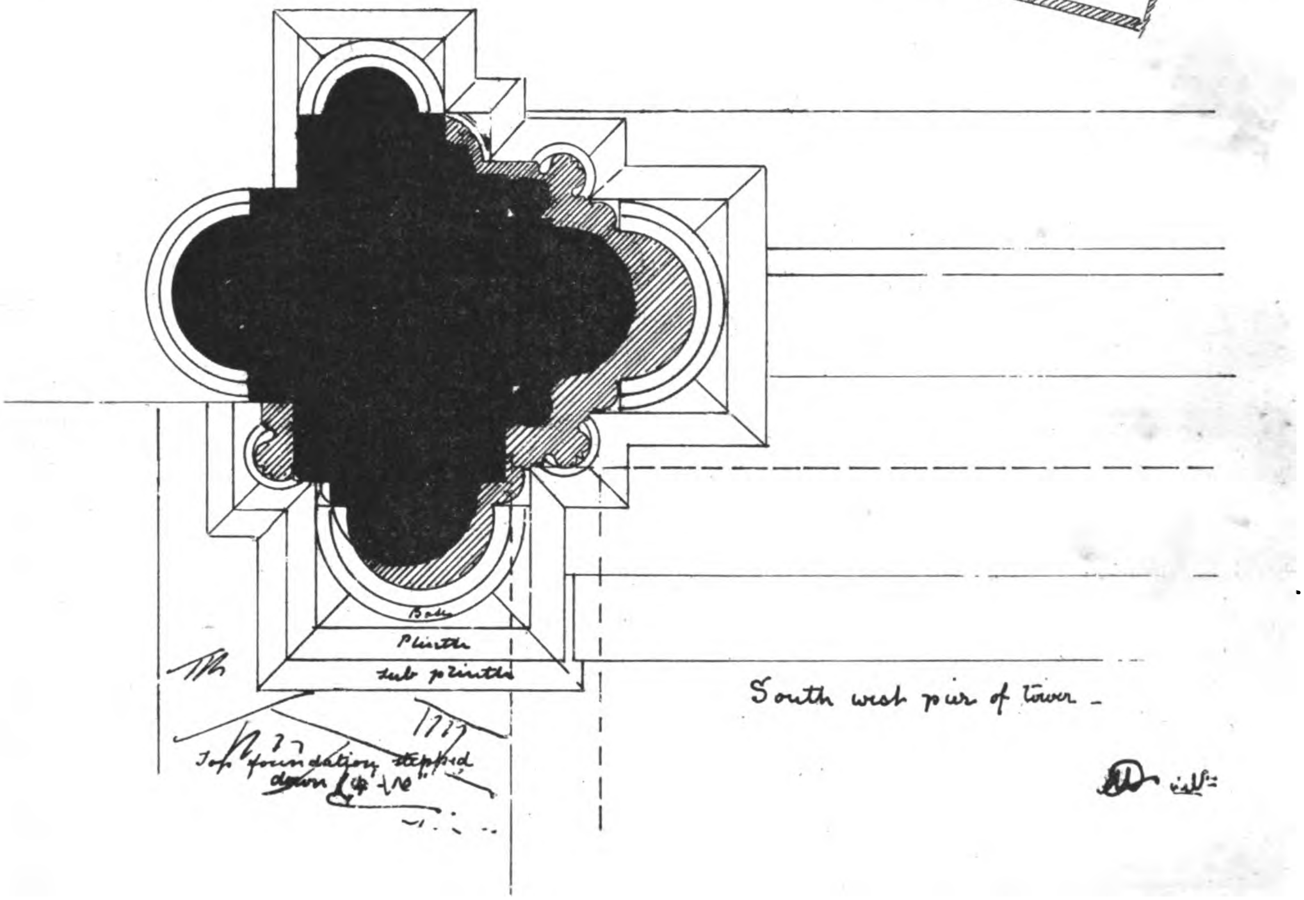

South west pier of tower

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have no necking, and shew no sign of ill usage, while one of the bases consists of a stone, circular on plan, with the top surface, on which rests the shaft, quite flat. The corresponding base appears as if worked out of a similar stone, but that the workman only completed one and left the other untouched. The arch contains on one side the remains of a moulding which on the other side has been knocked away and so forms a chamfer. The band over piscina is of stone, raised about 1 inch, and has the appearance of having once formed a moulding, but since hammered off. There were sedilia between the piscina and window, but only two stones, with a mould which formed part of the jamb, are left.

There are the remains of three groined ribs over the transept arch; there are no corresponding features over the nave arch. The nave and transept arches need no description; the chancel and remaining transept evidently corresponded. The holes under string on north and south elevations shew that at one time there was a lean-to roof, and these opens were the bearings of the collar ties, while the rafters went close up under the string course, which formed a kind of flashing.

The chapels, although vaulted in stone, had an outside covering, as may be seen by a stone string which marked the line of roof on the north elevation.

The south-west buttress of nave originally corresponded with that on the north-west side, but is completely forced out of its position by the ivy.

The wall on the north side of chancel contained a tomb. The following is a quotation from the "Monasticon Hibernicum":—"The statue of the foundress in alto-relivo, carved in freestone, though much defaced, is yet to be seen in an arch on the Gospel side of the high altar." Unfortunately this figure has been since removed (perhaps in the search for treasure), and is now placed upright against one of the walls in chapel of south transept.

The ground at the east end is formed into a graveyard. There are some very old headstones, but none of any peculiar interest. The two tablets in south wall of nave each bear the date 1677; one has the motto "*sine fine*" over a bird rising out of a flame, which is placed over a helmet, which is again placed over a shield. It appears as if one tablet contained the armorial bearings of the deceased, while the other described who he was, as it only contained an inscription, but corresponded in every other way. The headstone placed against the wall bears the date 1687, and was erected to members of the Montgomery family, who are still in possession of the estate.

Three iron tie rods bind together the walls of nave. There is a very large sycamore tree growing in the north transept; it reaches much above the wall over transept arch.

The south gable of refectory is well preserved, and corresponds as to style with the east gable of chancel. The pulpit in refectory, from which a reader entertained the monks with intellectual while they entertained themselves with more material pabulum, may still be seen.

The buildings may not be so extensive as many others in different parts of Ireland, but they are interesting on account of their being the finest remains of any work of that description in the united diocese of Down and Connor and Dromore, and seem to be comparatively unknown, as no photographs or views can be obtained.

IMPROVEMENTS IN CAPEL-STREET.

Amongst the numerous improvements in street architecture in our city may be noticed the new buildings erected on the site of the block of ruined houses which so long disfigured the west side of Capel-street, in front of the old Presbyterian church—a satisfactory evidence of the extension of trade in that locality, due to the enterprise of Mr. Patrick Boland, who has lately become the purchaser of the church and its dependencies, standing upon about one acre and a-half of ground. The street frontage extends about 60 ft., presenting an attractive composition of Italian character, comprising two distinct houses faced with red brickwork, having raised quoins, window dressings, modillion cornices, &c., of Portland cement. The principal windows exhibit some novel features, the large openings being filled in with double sashes divided by ornamental metal pilasters, and furnished with balconets, scrollwork of floral character being sunk in the arched heads over the openings. The buildings are three storeys in height, with high Mansard roof, forming an extra storey behind the cornice. The ground floor has been laid out with great economy of space, the entire of which is devoted to the purposes of trade, having two spacious shops on each side of central entrance to domestic apartments, the stairs being so arranged that the circular counters of each shop encompass them, leaving a large archway of communication between each. The walls are elaborately painted in oil, in imitation of leather panelling in carved oak frames. The entire flooring is laid with tesselated tiles. The decorative works throughout have been executed in a masterly manner by Mr. James Dobson, St. Stephen's-green; the ornamental ironwork by Messrs. Turner and Gibson, Oxmantown; the tesselated tile paving by Messrs. Sibthorpe and Son, Cork-hill; the joiner's work by Messrs. Thomas and Charles Martin, North Wall. The entire works have been carried out from the designs and under the superintendence of Mr. Charles Geoghegan, architect, Great Brunswick-street.

THE ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND.

There was an ordinary general meeting of the Institute on Thursday evening, the 17th ult.,

Mr. James H. Owen, M.A., President, in the chair.

The followingre port of the examiners appointed by the council, on the measured drawings submitted for the Fitzgerald medal and prize of the session was read and confirmed:—

"In accordance with your instructions, we beg to say that we have carefully examined the drawings submitted to the council in competition for the Fitzgerald medal, and have to report thereon as follows:—Although we cannot but regret that the distinction offered to the younger members of the profession has not been deemed of sufficient importance to induce more than one competitor to enter the field, we have nevertheless much pleasure in recommending that the Fitzgerald medal be awarded to Mr. Thomas Collot, S.R.I.A.I., for his excellent series of drawings of 'Grey Abbey, Co. Down.' Mr. Collot has evidently devoted much time and labour to the preparation of these drawings; and, while congratulating him upon the success which he has achieved, we would suggest that the illustrations would have possessed a greater value as a record of a most interesting monument of ancient times if they had been accompanied by a more extended selection of details drawn to a large scale, particularly moldings, which might have been represented at least half the actual size; and also if the measurements had been set forth on the various plans, elevations, and sections. We may add that the drawings are accompanied by a carefully-written description, which gives many interesting facts connected with the building. In conclusion, we cannot too strongly urge upon the junior members of the profession the advantage to be derived from the study and measurement of the numerous examples of ancient art which enrich our country; and we would express a hope that in future years the competition for the Fitzgerald medal will not be allowed to result in a walk over.

"C. Geoghegan, }
"J. E. Rogers, } Examiners."

The chairman congratulated Mr. Collot on his labours in producing the excellent drawings then before them. Their profession (he said), like all others, was, of course, built on its junior members. He hoped all those members would do better than they, the seniors, had done. Mr. Collot would now read for them a paper on "Grey Abbey, Co. Down;" and although he (the chairman) was not aware of its contents, he was convinced it would display the same intelligence and skill as had the drawings of the abbey then before the meeting. Mr. Collot's work should be an example to other young architects, to spend their holidays in inspecting and making drawings of some of our early buildings, with a view, possibly, to their conservation. He would unavoidably have to postpone the formal task of *presenting* the medal to Mr. Collot, as it was not yet quite ready, the inscription having to be engraved thereon; but, trusting to the meeting to imagine that mere formality gone through, they were ready to hear Mr. Collot.

Mr. Collot then proceeded to read a paper (given on another page) descriptive of his drawings, which were exhibited in the rooms.

A vote of thanks to Mr. Collot was moved by Mr. C. H. Brien and seconded by Mr. Charles Geoghegan.

Mr. Parke Neville, C.E., V.P., having taken the chair vacated by the president,

Mr. James H. Owen, M.A., president, read a paper* on the recent building case of Doolin *v.* Dixon, and for which he received a cordial vote of thanks. It was referred to the council for publication.

Recommendation paper read,—as non-professional associate, John Ribton Garstin, LL.B., M.R.I.A.

The scrutineers reported the following gentlemen as duly elected. As associates—J. L. Robinson (student); James Otway, C.E., T.C.D.; William Butler. As non-professional associate—George Booth.

THE ILLUMINATION OF LIGHTHOUSES.

Among the Parliamentary notices given for Thursday last were the following:—

Mr. Pim—To ask the Secretary of the Board of Trade why the recommendation of Professor Tyndall, for the further encouragement in Ireland of the system of illuminating lighthouses with gas instead of oil, as given in his Report to the Board of Trade on the 29th June last, has not been acted on, Professor Tyndall's report having being made after his inspection (by order of the Board of Trade) of the lighthouses at Howth, Baily, and Wicklow Head, where this system has been in operation, in the first case for more than four years, and in the second case for more than five years, with successful results.

Whether it is the fact that the Commissioners of Irish Lights have asked the consent of the Board of Trade to apply the gas system of illumination to the lighthouses at Mine Head and Hook Tower, on the south-east coast of Ireland, and that that consent has been withheld by the Board of Trade?

And on what grounds the Secretary to the Board of Trade withholds his consent to the more extended use of a system of illumination which, in addition to other advantages stated by Dr. Tyndall, is at the same time, more brilliant and more economical?

In reply Mr. Shaw Lefevre said that in consequence of the very favorable report of Professor Tyndall on the subject, the Board of Trade placed themselves in communication with the proper authorities, with the view of extending the proposed system of gas illumination to all the lighthouses in the United Kingdom, but they found considerable difference of opinion on the subject among the local authorities, and also on the part of the able and eminent engineer Mr Stephenson, and the Northern Lights Commissioners, as to the alleged superiority in brilliancy and economy as compared with oil. In consequence, the Board of Trade thought it best to direct that an accurate investigation should be made, and until that investigation was completed, they did not think it desirable to extend the application of gas to the lighthouses. It was true that the Irish Lights Commissioners had applied for permission to introduce gas instead of oil into the new lighthouses, but the sanction of the Government was withheld until the result of the investigation he had referred to had been ascertained.

The master of the steamship *Roe* has been fined 20s. and 10s. costs by the Belfast magistrates for neglecting to sail the steamer at the advertised hour, and for taking in cargo after that hour on the 14th ult.

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* See page 72 of this number.

THE AGE OF SHAMS.*

SOME years since (it matters not how many) a store was rented in an eastern city by a young man, whose intelligent appearance and business capacity were calculated to prepossess people in his favour, for the purpose of doing a commission business in the purchase and sale of grain. His store soon exhibited every evidence of active and growing prosperity, based upon a solid foundation of capital. His floors were heaped with well-filled bags, his teams were constantly occupied in the transport of the same, and the merchant himself and his single clerk were assiduous in their devotion to their duties, and soon secured the respect and favourable opinion of those who dealt with them, by their prompt and careful attention to business. Years rolled on, bringing increasing prosperity, the young man attained full maturity of age, and finally retired from business with a large fortune, and was respected and pointed out to young men as a noble example of well-earned success, the result of honesty, enterprise and devotion to business. And, so far as the world knew, such was the case. But there was another side to the story which did not appear in public. At the time he rented that store his means were barely sufficient to meet his unavoidable daily expenses for a very limited period. He got the store on credit; he bought his teams and engaged his assistants on credit; the piles of bags upon his floors were filled with sawdust, with the exception of the outer tiers which formed a veneering of bags of grain; his teams were kept busy delivering imaginary orders; the whole concern was a sham; and upon this false basis he managed to build up a real business which resulted in a fortune. Had he failed, he would have been denounced as a swindler. But at the end of the first year he came out ahead of his expenses, and from that time his prosperity was unimpeded.

I have told this story for two reasons. First, because I can vouch for its truth; and second, because it affords a favourable illustration of a common practice of working out the problem of life algebraically, by starting with a mere representation of the desired quantity, and putting it through the varied forms required till the final equation is attained, and is no longer needed to represent it. There are thousands of different ways of doing it, and the careworn faces of thousands of men in every city in the land, attest today the weight of the burden they are carrying in the effort to keep up appearances on which their credit depends, well knowing that a single mis-step involves utter ruin and disgrace, while success insures power and respect, and "no question asked."

Herein lies the atrocity of every such act; that it leads men to decide upon, not alone its intrinsic merits, but upon its success or failure. The devil never devised a subtler scheme for throwing dust in the eyes of his victims, than the substitution of such a test, for that of the simple question of principle. Do but consider the specious arguments which may be urged in its defence. This man, for instance, may have felt an earnest desire to acquire property for the sake of what he conceived to be good and generous purposes, or he may have felt that, as a poor man, he must submit to hardships and mortification, which his pride could not brook. He knew that he stood a chance of working out the sum successfully, and if he did so, nobody would suffer, while if he failed, it would perhaps cause no more real suffering than might ensue from his necessities if he remained a poor man. And finally, or perhaps primarily, the chance of success tempted his ambition and he took the risk on the principle of "nothing venture, nothing gain." Now all these arguments fall to the ground and perish like flax in the fire, before the simple principle that we have no justification in doing evil that good may come. The first art was a dishonest one, for it involved fraud and deception, and no matter what was the result, it was a crime, and one which brought its own punishment in its effect upon the moral nature of its perpetrator, though he himself may have lived and died unconscious of it. Such acts are perhaps the natural result of instilling in the mind of youth the contemptible dogma that he should be honest because "honesty is the best policy." If he has no higher motive for honesty than the hope of profiting by it, he will be ready to abandon it where he sees, or thinks he sees its fallacy, which a very little observation will enable him to do unless his perception is keen enough to enable him to look beneath the surface, in which case he will recognize the fact that in the broadest and noblest sense the proverb is true. Think of the effort required to stifle conscience, while keeping up such a system of deceit in every act and word and look. And judge if the man who could carry it through successfully would ever after be deterred from any act by the fact of its dishonesty, or the danger that it might inflict cruel suffering upon innocent victims.

The present is emphatically the age of shams, and the illustration I have given is but a sample of their natural fruit. We have abandoned realities and are satisfied if we can grasp their shadow. We not only know that "all is not gold that glitters," but if we can secure the glitter we care not whether the substratum be gold or putty. We consent to accept the outside show for the reality, just as we take paper currency as the representative of value, which we know is not intrinsic.

What is the use of paying a large price for the genuine article, when an imitation, which looks just as well, can be had for a small one? The use is this, that it preserves the self-respect without which no man can be worthy of the respect of others. He who admits the principle that appearances may be safely substituted for realities, in matters which involve no direct evil, is undermining the foundation of all true honesty and honorable feeling. And the effect of the admission of this principle may be seen at this day in art, literature, science, politics and religion, each of which is boldly flaunting its shams in the face of the world. Look at the bread and butter stories in the (so-called) literary papers; look at the advertisements of shams in the daily journals, and judge of people for whom they are prepared by those who know the tastes they must cater for; look at the cant which passes for religion; the bombast which assumes the name of patriotism; the tawdriness which represents art;—is it not all in keeping with the frauds and crimes whose nauseating details are daily recorded in the papers, and devoured with a gusto which in itself is a sufficient proof of a depraved taste? And the curse of it all is this, that it forces men who would be glad to lead an honest and simple and rational life into the sacrifice of everything that is worth living for, to enable them to live at all. Unless they keep up appearances they are trodden under foot. Unless a young man start in life with the determination to strain every nerve, and give his whole strength of body and mind to the one object of acquiring wealth, his life will be a constant struggle with gaunt poverty. And if he start with the object of acquiring a competency, and then seeking a more rational and elevating source of happiness than mere accumulation, he will find, when the time comes, that he has no more power to withdraw than the gambler has to leave the fascinations of the table.

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* From the *American Builder*.

CORRESPONDENCE.

NATURAL OR ARTIFICIAL CONCRETE?

TO THE EDITOR OF THE IRISH BUILDER.

DEAR SIR,—I return the block of concrete (?), and am much obliged by the loan of it. The question is very interesting, and worth further investigation. There is a quarry in the parish of Killashee, near Naas, Co. Kildare, which I know well, and where blocks could be procured of gravel firmly concreted by a natural deposit of lime so similar to this that I would feel hesitation in believing absolutely that your specimen is artificially-prepared concrete. There is no improbability, nevertheless, in the supposition that the ancient "Scotic" builders, who so manifestly understood thoroughly the uses and combinations of lime, were conversant with the employment of concrete.

Richard Moore, Esq., of Killashee, is or was a subscriber to your journal, and takes an interest in all matters relating to building, and possesses considerable practical information on such questions as these. It is possible that if you made application to him he would, with his well-known courtesy, favor you with a block from the gravel-hole or quarry I have referred to, situated in his demesne, near the entrance-gate on the left-hand side going towards Killashee House.

Our able friend, Dr. Cameron, would, I have no doubt, give us the benefit of his opinion on specimens submitted to him of the undoubtedly naturally-formed concrete, or that presumedly so, which I return with very many thanks. THOMAS DREW.

March 18th, 1870.

CONDUCTING DRAUGHTSMAN.

TO THE EDITOR OF THE IRISH BUILDER.

SIR,—An advertisement appeared in last week's London *Builder* and *Building News* for a "Conducting Draughtsman in an Architect's Office in Dublin"—a first-rate man being the only one likely to be treated with—"An Englishman preferred."

Now, I am afraid there is "something rotten" in the city of Dublin when an architect is *compelled* (at least I shall charitably suppose so) to look for an assistant in England. The fact is, it is very difficult to get an efficient assistant in Dublin.

I think we ought to copy the British Institute in forming classes for the mutual improvement of the younger members of the profession. Now, in Dublin there is no such thing. The ordinary monthly meetings of the Irish Institute are not enough.

When will the youthful members of the profession stir themselves and agitate for something in the way of classes for the study of design and construction? I believe there was a class formed for the study of design, &c., and it fell through owing to the members not attending. Well, "As the old cock crows, the young one learns." So long as the senior members of the profession take so little interest in ordinary general meetings, it is hardly likely the juniors will be diligent.

Hoping something may be done to *re*-form a class for mutual improvement in connexion with the Institute,

I remain your obedient servant,
AN UNFORTUNATE IRISHMAN
WHO WANTS TO LEARN.

March 21st, 1870.

"IRISH LITERATURE."

TO THE EDITOR OF THE IRISH BUILDER.

SIR,—I perceive that in your number for the 1st ult. you drew attention to a paper in the *Athenæum* professing to enlighten the readers of that journal on the progress being made in "'Irish' literature, *in spite of political excitement*."

You are no doubt already aware that the "State Publishers by appointment" announce themselves as *agents* for the "new printing company" by whom their works are turned out. "In the midst of political excitement," they very opportunely inform the readers of "The Life of St. Patrick," and the Irish public generally, that they "have resolved to charge no commission for publishing works printed by them until the author has been refunded his original outlay, and "that they print, in the first style, greatly under the usual charges"!!

I am loth to entertain the idea that there was any pre-arrangement that the article which appeared in the *Athenæum* should be ultimately paraded as a "trade" puff, in every imaginable style of typography, amongst the announcements of the "State Publishers."

In the article under notice there is one sentence, to which no exception can be taken. It is this:—"Ireland *ought* to have a *native* school of writers." This, of course, is the more to be desired just now, when we have—what I may be told was "hitherto unknown in Ireland"—philanthropic publishers and wonderful printers!!

On turning over the pages of last week's *Athenæum*, my eye caught another bit of "Gossip," which if you have space you might print. It gives another note on "Irish Literature."

> "Students of Irish History may like to know that, under the expressive designation of 'The Old Book Shop,' there is, on Ormond Quay, Dublin, an establishment almost exclusively devoted to the sale of ancient and modern books connected with the history, antiquities, biography, and general literature of Ireland. Many a book not to be *discovered* in a public library may be *found* in such a collection"!!

Erin.

MR. C. B. VIGNOLES, C.E.

TO THE EDITOR OF THE IRISH BUILDER.

Sir,—The article under the above heading which appeared in *Engineering* of the 11th inst. (and which you copied into your number for 15th), gives but a meagre account of the professional career of the present President of the Institution of Civil Engineers, London. The writer should have told us of the fact that Mr. Vignoles was an Irishman by *birth*, and that it was he who first broke ground on the Dublin and Kingstown Railway—the most successful of Irish lines. It was through his superior skill and knowledge as an engineer that the Waterford and Limerick Railway Co. got their bill passed, despite the opposition they met with at the time from the Dublin and Cork Railway. Among other works on the continent, the writer did not give us any information relative to the Tudela and Bilbao Railway, and of the almost insuperable obstacle he surmounted in passing the Ordunia spire of the Cantabrian Pyrennees; also the surveys and soundings of that part of the Bay of Biscay comprised within the limits of the harbour and bay of Portugaleté. Two of Mr. Vignoles' sons are pursuing the same noble profession as their father, the eldest is dead some twenty years or more, and the youngest is a clergyman of the Church of England.—Yours, C.E.

22nd March.

LAW.

ACTION AGAINST A LAND COMPANY FOR TRESPASS AND BREACH OF CONTRACT.

COUNTY ANTRIM ASSIZES.

(Before the Right Hon. Mr. Justice Keogh).

M'CULLOUGH *v.* ROYAL LAND, BUILDING, AND INVESTMENT COMPANY, BELFAST.

The plaintiff in this action sought to recover £900, for damages sustained by him in consequence of a breach of contract made with defendants in the course of last year. The case came on for hearing on Monday at the Record Court, Belfast.

Mr. Andrews stated the plaintiff's case. Plaintiff was building a number of houses of a class which let readily in Belfast. The Royal Land, Building, and Investment Company proposed to assist persons building houses by giving them instalments of money on the security of the houses being built, and this security was obtained by a very clever arrangement on their part. When a house was built a certain height, the company would advance a sum of money on the security of what had been erected. When the house had advanced another stage the company would advance a further sum of money, having as their security the further advance of the houses towards completion, and in this manner the Building Company had that security for their money which they would not have by giving the loan in a bulk sum previous to the houses being erected. In August, 1868, Mr. M'Cullough obtained the lease of a piece of ground in Wilton-street, on which he partially erected eight houses. Having expended all his money, he applied to defendants for a sum of money to enable him to complete the houses. The company had an estimate made for the value of the houses as they stood, and that estimate was £400. They agreed to lend plaintiff £300 in certain instalments of £60 each. The first instalment was to be paid when the houses were one storey high, the second when they were ready for the roof, and the remainder as the houses advanced in their several stages towards completion. He would call the attention of the jury to the first and second instalments. The houses were made one storey high, and afterwards were in such a condition as to be ready for the roof. These two instalments having become due, plaintiff applied to the company for advances. Out of the first they made certain deductions, to which plaintiff objected as being illegal, but he was not paid one farthing of the second instalment. In consequence of the harshness of defendants in not paying him the instalments, plaintiff was unable to complete the houses. The result was that defendants entered upon the premises, and the houses, which the company had themselves valued at £400, were bought in by the chairman of the company for £100. In this manner plaintiff had been deprived of his hard earnings of years of labour; and, when the facts were placed before the jury, he had no doubt they would give plaintiff, who had been reduced to a state of ruin by the treatment to which he had been subjected, large and substantial damages, which would place him in a position not inferior to that which he occupied when he commenced to have dealings with this company.

Plaintiff, examined by Mr. Munroe, said—In the month of August, 1868, he commenced to build eight houses in Wilton-street. Applied to the defendants for a loan, and it was agreed that he should receive £300, repayable by quarterly instalments. Was to receive £60 of the loan when the houses were one storey high; £60 when they were ready for the roof; and the remainder as the houses advanced different stages towards completion. When the houses were one storey high, certain deductions were made out of it, which he disputed When the houses were ready for roofing he applied for the second instalment, which he did not receive; and, having no money, could not proceed with the building. Defendants then sold the houses for £100, giving him no notice of their intention to do so. Sued at the quarter sessions for £11 8s. 6d., when the case was dismissed without prejudice.

Mr. John Browne, jun., deposed that he had been chairman of the company at the time this transaction took place. At the time of sale, he considered the houses were ready for roofing; and only that he had been informed by the secretary that plaintiff had run away, he would have advised the company to pay the second instalment.

Plaintiff, in answer to his lordship, said he was at the houses from day to day until they were seized. He never left Belfast, as reported.

This closed the case for plaintiff.

Mr. Falkiner addressed the jury for defendants. He said his case was that everything had been done in this transaction in accordance with the ordinary rules and in the ordinary way in which business was carried on by this company. They had carried on business for a considerable time, and advanced a great deal of money for building houses, and this was the first occasion on which they had any litigation. He would, however, be prepared to show that in this case they had acted with perfect fairness and good faith, and he thought he would not be astray in assuming with the knowledge and concurrence of plaintiff himself. The first complaint he made was with regard to a sum of £10 on foot of the second instalment. Now he (counsel) considered when he came into court that the first instalment was closed. It was so considered by the company, and he believed by all parties. It was brought up that morning by plaintiff, who complained that he had not received the full amount of that instalment. It would be impossible for them to carry on business at all if all these old transactions were from time to time to be raked up after they had been settled and closed. As regards this instalment, there was a fair agreement between hhe parties with respect to it. No complaint had been made respecting it, and it was too bad now, after he had come into court, to meet what was the real question in the case—Were these houses in the condition entitling plaintiff to the second instalment at the time it was applied for? The whole case, in the end, would resolve itself into that; and he would be able to prove that plaintiff never earned that instalment. Winter was coming on; the houses were roofless; the weather changing; and it became necessary, in the interests of all parties, that there should be a sale, the plaintiff not putting himself in a position that this company could advance further money. The sale had been conducted in a regular way. Mr. Browne himself had stated that it had been sold at a fair selling value – the market value of the property. No complaint was made about the matter for some months afterwards; and first he applied for £11, then for £30, and now he came before the jury demanding £900. If the original sum of £11 had been paid him, he believed there would have been an end to this case. This building society were bound to carry on their transactions with the utmost strictness, and it would be impossible for them to carry it on without it. They lent money to parties without capital, and without security further than what the property on which the money was lent would be worth when completed. Mr. Andrews had made a mistake when he stated that the property at the time the money was lent was worth £400, for it would not be worth that sum until plaintiff would have performed his contract and completed the houses. If they did not observe great strictness in conducting such a business they would likely very soon find themselves under a process of winding-up under the Court of Chancery. The question now was, were the houses ready for roofing at the beginning of September? It was the duty of the secretary to see that they were ready, and, if he did not, he would be dismissible. At the time the money for the second instalment was applied for, a committee, consisting of Mr. James Shaw and Mr. James M. Thomson, were appointed to report upon it. They did so, and reported that they could not recommend it, unless proper joists and roof timber were supplied. It was on this report the society had acted, and evidence would be given to show that they were correct in doing so. As to the sale, he maintained that it had been done with the acquiescence of plaintiff, as he had received due notice of the sale; and further acquiesced in it by calling for the balance of the proceeds of the sale, and by suing at the quarter sessions for money had and received, without any reference to breach of contract or anything else. He showed that the company had acted with great fairness to plaintiff throughout, and even advanced him money before the mortgage was drawn out, and in conclusion called upon the jury to believe that they had acted with fairness and honesty in this transaction, and asked for their verdict for the defendants. They lodged £15 12s. 6d. in court, which he held would meet all the claims of plaintiff.

Mr. J. C. Graham, secretary of the company, was examined, and gave evidence with regard to the deductions made off the first instalment.

In answer to his lordship, he said he did not remember having stated to any person that plaintiff had left the country previous to the sale; but he could not say whether he had or not.

In reply to Mr. Kisbey, he stated that Mr. Rea, who bought the houses at £100, had nothing to do with the company, and it was the first transaction he had with them.

Mr. R. Barclay was examined in reference to a sum of money paid him out of the first instalment for conveyancing.

Mr. Hugh Hamilton gave evidence as to the sale, which he said was conducted by him in the ordinary way. He got advertisements inserted in three papers, and 100 bills printed and posted in the usual way. £75 was the highest bid, and it was bought in by the chairman for the company at £100.

Mr. Rea was examined with regard to his purchase of the houses. He was a bricklayer, and had been employed by plaintiff at these houses. When he bought the houses he considered he was stepping into Mr. M'Cullough's shoes, and applied to the company for the same instalments as had been promised to plaintiff He was refused, and had to apply to the Imperial Building Company for a loan of £220 to enable him to complete the houses.

Mr. Nicholl, a clerk in Mr. Graham's office, was examined, and deposed that he had served a notice of the sale on the 5th December, 1868, in the house of the plaintiff's mother.

Messrs. James M. Thomson, T. H. Browne, and James Shaw, directors of the company, were examined with regard to the survey made of the premises when the second instalment was applied for. They stated that the houses were on the square, but the joists were insufficient, the doors and window-cases not on, and the sculleries and yards not covered, which was required before they considered the second instalment should be paid.

Mr. Boyle, of the firm of M Lean and Boyle, solicitors to the company, gave evidence with regard to the costs furnished about the loan and subsequent transactions, and also why he advised Mr. Graham, who was also secretary of the Imperial Building Company, to obtain a loan for Mr. Rea out of that company, instead of out of the Royal Land Company.

Mr. Kisbey then addressed the jury for defence, and contended that the notice was a good notice, and that defendants had a right to sell and exercise control over the property at the time they did. On the question of the breach of contract, he contended the evidence shewed that the houses were not ready for roofing at the time of the survey for the second instalment. In conclusion, he argued that the money paid into court was sufficient to meet the justness of plaintiff's demand.

Mr. Duffin replied on the part of plaintiff, commenting on the small sum plaintiff received in cash out of the first instalment, the balance being swallowed up in costs and fees. As to the payment of the second instalment, he maintained that the company should have paid it, as the evidence even by defendants' own witnesses proved that the houses were in a fit condition for the roof. As an explanation of plaintiff's having brought a case for the small sum of £11 8s. 6d., he said at the time he did not know the extent of his rights.

His lordship then charged the jury, going minutely over the issues to be submitted to them, at the same time informing them that the question might be said to resolve itself to this—Was plaintiff entitled to the second instalment? If they should find he was, then he had sustained grievous damage in consequence of his not receiving it, and it would be their duty to find a verdict for the plaintiff. If, on the other hand, they believed he was not entitled to the second instalment, then the breach of contract was not on the side of defendants, and it would be their duty to find a verdict in their favour.

The jury, after about half-an-hour's deliberation, returned a verdict for plaintiff, with £104 4s. damages, and 6d. costs, in addition to the amount lodged in court.

ST. PATRICK'S CHURCH, KILCOCK.

The new parish church, Kilcock, was consecrated by his Grace the Archbishop of Dublin on the 17th ult. It has been erected at a cost of about £2,000. The building, which is the style of the 13th century, consists of a nave and aspidal chancel, measuring 65 feet by 20 feet, robing-room, south porch with detached round tower and spire, the latter rising to a height of about 70 feet from the ground. The nave is fitted with open benches, and affords accommodation for one hundred persons. There is a handsome carved stone pulpit. The ancient font, which is an object of much archæological interest, has been removed from the old church and placed in the nave. The chancel is separated from the nave by a double roof truss (acting as a chancel arch) supported by red marble columns, with carved capitals and corbels. The ceiling of chancel is of more elaborate design than that of the nave, being constructed with diagonal boarding stained and varnished. An important and highly artistic feature in the church is the stained glass. The chancel windows are devoted to the four Evangelists, while those of the nave represent St. Peter, St. Paul, and the patron Saint of the Church, St. Patrick. The west window, representing the 'Flight into Egypt,' 'Baptism of our Lord,' and the 'Ascension,' is a memorial to the late Mrs. Coates, and has been presented by her son, William Coates, Esq., of Knockanally, who also contributed the greater portion of the cost of the building. In the upper part of the tower is hung a fine bell of excellent tone, supplied by Messrs. Curtis and Son, of Middle Abbey-street. Mr. J. E. Rogers, of Great Brunswick-street, was the architect; Mr. H. Sharpe, of Kells, the builder.

BOOKS RECEIVED.

The Philosophy of the Bath, with a History of Hydro-Therapeutics and of the Hot-Air Bath, from the Earliest Ages. By Durham Dunlop, M.R.I.A. Dublin: Moffat and Co.

To those who have not made Hydropathy a special study this work of Mr. Dunlop's will prove useful. In a very comprehensive form he lays before his readers the value of the Bath, and its general applicability to the alleviation of all bodily diseases.

In speaking of the defective condition of medical education, the author says:—

"It is a positive truth, and as any one familiar with the treatment of disease must know, that a practitioner cannot be safely entrusted with human life who is not thoroughly proficient in surgical knowledge. Yet so disgracefully defective is the system of medical education, and so utterly regardless are the licensing bodies of the public interests, that, without having passed any examination by a surgical board, a person may be registered as 'duly qualified' to practise. . . . . .

"All these doors and more are standing invitingly open, competing for candidates to enter, pay fees, and receive in exchange for their cash any combination of letters that may suit their purpose or tickle their vanity; in virtue of which they can then authoritatively knock at the door of the General Medical Council, and demand to be placed on the register as 'duly qualified practitioners,' legally licensed to commit manslaughter with impunity! And yet they may be, and as a rule are, profoundly ignorant as anatomists, miserably unacquainted with the organs of the human body, and their functions as physiologists, completely destitute of even a smattering of rational hygiene, or of natural therapeutics, while they may be so disgracefully illiterate as to be unable to 'stand on the same platform as the pupil teachers in the village schools of Scotland,' as Dr. Alexander Wood affirmed, or as Sir Dominic Corrigan said, that they 'could not pass an examination for the place of a letter-carrier!'"

In a chapter on "The Action of the Bath as preservative of Health," we find the following remarks:—

"Now, as *preservative of health*, the peculiar and invaluable properties of the bath act, as we have observed, through the medium of the skin, by maintaining its vital organism in vigorous action, on which healthy nutritive life is so immediately and materially dependent. If we compare the action on the skin of a common hot-water bath, or of any bathing or washing process which merely cleanses the outward surface of the skin, with the mode in which the hot-air bath acts, the vast and salutary difference cannot fail to be at once discernible. Remembering what we have said about the surface of the whole body being covered over with some seven millions of tubes or pores—that those tubes are each about a quarter of an inch in length, and if stretched out, and laid end to end, would extend nearly twenty-eight miles—that this immense drainage system is designed by nature to relieve the body of its vicious secretions, and in return to convey by respiration and absorption healthy nutriment from the external atmosphere into the system—remembering, also, that in all cases of imperfect or obstructed perspiration, a deposit is formed at the mouth or external opening of each pore, which has the effect of thickening and hardening the epiderm or scarf skin, thereby tending to further paralyse the healthy action of the skin organism, and sow the seeds of disease—taking all these well-established truths with us, any man of ordinary intelligence can readily appreciate the unapproachable superiority of the hot-air over all other baths as a potent sanitary and sanative agent.

"For what does the hot-water bath, or any mere surface washing of the body do? No harm, assuredly, but *the pores are not cleansed.* The scaly deposits of the scarf skin, which in a natural and healthy condition of body exfoliate to keep the pores free, are not removed by mere external bathing or washing, nor are the excretory functions of the skin stimulated, as they unquestionably are by the hot-air bath. At best, ordinary surface washing only cleanses the natural sewers of the body at their *outlets*, and of such cleansing it may be said—

'It will but skin and film the ulcerous place,
Whiles rank corruption, mining all within,
Infects unseen.'

Ordinary bathing or washing may keep the surface of the body in what is considered a state of cleanliness; but, as compared with the action of the hot-air bath, such cleanliness is only like removing filth from the *mouth* of a sewer, instead of *flushing the whole sewer itself.* This is what the hot-air bath does, and hence its immeasurable superiority over all other appliances as an effectual means by which the whole sewerage system of the human body can be flushed, scoured, and cleansed of impurities, and the skin organism maintained in vigorous vitality. Persons who are in the daily habit, for instance, of using the shower bath imagine that the hot-air could add nothing to their cleanliness, comfort, and health; but they are very much mistaken, for, as it has been truly said, 'the blacksmith begrimed with smoke and dirt, who *freely perspires* over his daily task, is cleaner, in the true sense of the term, than the *best washed* individual in the land. Surface washing alone will not suffice. To secure health, the blood itself must be purified, its inmost channels flushed and cleansed.' This the hot-air bath alone can do, and the truth of this the habitual surface-washer can test for himself, Let him take a hot-air bath, and he will be astonished at the amount of apparent dirt which the gentle friction of the hand on the softened epiderm will expose to view. This is the dead scarf skin, the removal of which promotes cutaneous respiration, with all its consequent advantages.

"We have already seen how essential cutaneous respiration is to health—that animals coated over with any substance impervious to air invariably die in a very short time. If, therefore, death would necessarily ensue from the total closure of the pores of the skin, it follows that any partial closure, involving imperfect action, must prove proportionately detrimental to health. Hence, so vital are the functions the skin is designed to perform in the animal economy, that the highest medical authorities concur in affirming, that the maintenance of its organism in a sound state is essential to vigorious bodily and mental health, and at the same time one of the very best preventives of disease. It is affirmed that fully three-fourths of the diseases to which civilized man is subject, are attributable to the closure of the pores of the skin, and therefore it is that the hot-air bath possesses such invaluable qualities; for by no other means, at once so simple and enjoyable, can the functions of the skin be maintained in perfect vigor, and a healthy condition of body preserved.

"We must also take into consideration the habits engendered by civilized life, which is so exceedingly artificial that few, out of hundreds of thousands, live in anything approaching to a strict obedience to the laws of the human economy. Riches and poverty alike war against health, that is, have a tendency to create habits and modes of life which impair natural functions and induce or predispose to disease. Thus we almost necessarily depart in our customs and habits from what Nature designed, and so far as we do so, the greater is the tendency to impaired health. It is as a corrective of these morbid tendencies, that the hot-air bath comes as a blessing to our civilization by affording a simple, yet powerful and pleasurable means, by which to counteract or avert the injurious effects it is calculated to produce."

MISCELLANEOUS.

Improvements in the Manufacture of Artificial Fuel.—This invention, by Mr. David Barker, of Northfleet, consists in certain improvements in the treatment of coal, lignite, coke, peat, charcoal, and other carbonaceous substances so as to produce artificial fuel capable of being applied to a variety of useful purposes. The coal or carbonaceous material is reduced to a state of powder or minute division, and the particles combined or agglomerated by the means after-mentioned. For the treatment of one ton of coal, or other carbonaceous material, about fifty-six pounds of pitch, or other ordinarily insoluble analogous resinous substance, are added to about five gallons of carbolic acid and from five to ten pounds of chloride of sodium (common salt), together with such a quantity of water as may be considered requisite, and then boiled, by which means perfect mixture of the materials is effected, and a permanently liquid compound produced. This liquid compound is then mixed, either in a hot or cold state, in the proportion before-mentioned, with the coal or other carbonaceous material, and the substances thus combined then formed into blocks by any of the known means or machinery adapted to the purpose. The blocks of artificial fuel, having been thus formed, are subjected to the influence of heat, whereby the aqueous moisture contained therein is evaporated and an artificial fuel produced which, when burnt, is free from smell, is strongly cohesive, and at the same time waterproof, or impervious to moisture, under the conditions to which artificial fuel is ordinarily subjected. It should be observed that the above-mentioned proportions are approximate only, and may be somewhat varied according to the nature of the carbonaceous material under treatment, and to the degree of cohesiveness which it is desired to impart to the fuel.

The new municipal buildings, Belfast, which are in course of erection on the site of the old egg and poultry markets, in Victoria-street and Lower Chichester-street, for municipal purposes in connection with the Borough, are fast advancing towards completion, the principal portion of the building being now up to the second storey, whilst one part is being roofed. It is expected that in a short time the building will be in readiness for the transacting of public business.

Modern Inventions.—That great invention the "Cronoghraph," which times all the principal events of the day, and has revolutionised and superseded the clumsy old-fashioned "Stop-watch," seem likely to be eclipsed in fame by that still greater and more useful invention the "Keyless Watch." The fact of no key being required renders these Watches indispensable to the traveller, the nervous, and invalids. The enormous number sent even by post to all parts of the world, is a convincing proof of their great utility. The prices at which they are sold range from 5 to 100 guineas. Thousands of them are manufactured by Mr. J. W. Benson, of Old Bond-street, and of the Steam Factory, Ludgate-hill, London, who sends post free for 2d a most interesting historical pamphlet upon watch making.

NOTICE.

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The Irish Builder.

VOL. XII.—No. 248.

The Belfast Exhibition.

THE working men of Belfast have resolved to get up a Local Exhibition in connexion with the forthcoming International Exhibition in London, and it is intended to be opened in the Ulster Hall, Belfast, on Tuesday, the 17th May. With the highly influential patronage and energetic executive committee they have secured, the workmen may now look forward to a successful issue, creditable to themselves and worthy of the town. The various manufacturers should throw themselves into the matter, and assist the workmen by contributing from their workshops and warehouses. This has been done to a very large extent, and the nobility and gentry of the neighbourhood have promised to contribute from their art-treasures and scientific collections sufficient to make of itself a valuable, interesting, and instructive exhibition. One of the results of local workmen's exhibitions is intended to be the support of schools of art, as referred to in the prospectus of the London International Exhibition, and in the speeches delivered at the meeting when this movement originated in Belfast. Indeed, considering the growing extent of Belfast, and the success of its commercial enterprise, it is strange that it is until now without a school of art worthy of its benevolence, wealth, and enterprise. An effort is now being made to accomplish this object, and a committee has already been formed; and probably a town meeting will be called to awaken the interest of its wealthy merchants, who only require to have the matter properly laid before them to secure their most hearty co-operation, and to follow the example of such men as Charters, Mulholland, Johnston, and others whose names stand so creditably before the hundreds and the thousands in the various subscription lists for local and other philanthropic purposes.

The following is taken from a circular which has been issued by the committee:—

Belfast and North of Ireland Exhibition, in connection with the Workmen's International Exhibition, London, 1870.

The general committee of the above undertakings have resolved to hold the local exhibition of arts and manufactures in the Ulster Hall, Belfast, on the 17th of May next, and ten following days. They have appointed an executive committee, to adopt such measures as they may deem advisable for procuring contributions in fine arts, natural history, and other objects of interest and instruction from gentlemen in Belfast and the North of Ireland, in order to supplement the workmen's display, and to carry out the general arrangements of the exhibition.

The workmen of the North of Ireland have been invited to exhibit specimens of the particular branches of work in which they are engaged. Each workman will have the opportunity of showing his skill in his own special department, or of calling attention to any improvement in the manner of manufacture he may wish to introduce, and the public will be able to understand the whole process of construction through which a completed article has passed.

The working men have taken up the matter warmly, and have already applied for a large space for the exhibition of articles of their own invention, workmanship, manufacture, &c. It is confidently believed that the exhibition will be as interesting and successful as it will be unique in the annals of Belfast.

In order to ensure success, and to make the exhibition attractive and useful, the committee appeal to the nobility, gentry, and manufacturers of the province for the loan of works of art, pictures, oil-paintings, engravings, drawings, photographs, sculpture, antiquities, curiosities, scientific novelties, objects of natural history, flowers, plants, decorations, &c. Any of the above articles will be thankfully received by the committee, at the Ulster Hall, not later than Saturday, the 14th of May. Such articles as may be forwarded will be carefully protected and secured from injury while on view, and duly returned at the close of the exhibition.

ROBINSON'S PATENT CONSERVATORY.

IN this number we give an illustration of a conservatory on a new principle, and capable of being adapted to any requirements for nourishing and protecting all classes of trees, flowers, or plants. It can be constructed of every variety of form, suited to any position, either as a lean-to, with end or front abutting, to a drawing-room, saloon, or hall, or as an independent house. In the case of being placed with an opening from an apartment, it is particularly suited, and can be arranged that the whole house may be taken from one standpoint or concentrated into a mirror and repeat the effect, which can be enjoyed from any part of the room. Whatever position, form, or size the house is made, it will always have a picturesque appearance. The peculiarity of its construction consists in the base being formed of metal with a bold moulding, made in so many angle-pieces and straight parts, all in short lengths, with flanges drilled and suited to each other, secured with small bolts and nuts, laid down upon any level surface, not requiring any masonry or brickwork, consequently making the total cost of a conservatory, vinery, or whatever may be the class of house, very much less than ordinary houses. It can be easily, if required, enlarged, changed in position, or entirely removed without deranging any of its parts. The sashes comprising the house are made to a size, not exceeding 5 ft. by 4 ft. each, suited to their different positions, and are placed with their stiles overlapping each other; and a piece of timber (of any breadth required) between in a perpendicular position, and perforated more or less according to the amount of ventilation necessary, with covering-pieces, similarly perforated, to cover or uncover, to admit or exclude the air, controlled by a handle and lever easily worked. This ventilating apparatus diffuses the air generally over the house without draught, and forms a very ornamental feature. The ridge is surmounted by an ornamentsl cresting and finials at each termination. This house has a very pleasing effect, and may be placed with advantage, and form an ornament to a space to be filled or where an object is required, with far greater effect than any other house of this description that has ever come under our notice. The inventor is one of our own townsmen; he has gone to great trouble and expense in getting up this house and making it perfect, with a view to create a trade in our city. He manufactures them on his own premises by the aid of steam power, sawing, planing, and moulding machinery, and we wish him every success in his undertaking. We may also add that the patentee (Mr. Samuel Robinson, builder and contractor, 11, Westland-row) has patented several of his inventions, of which those members of his own trade are well aware.

CORK CUVIERIAN AND ARCHÆOLOGICAL SOCIETY.

THE last meeting of this society for the session 1869-70 was held in the Library of the Royal Cork Institution on Wednesday evening, 13th inst., R. R. Brash, Esq., M.R.I.A., President, in the chair.

Mr. Robert Day, M.R.I.A., exhibited and gave some account of an ancient Irish stone idol, which has lately passed into his collection. It was taken by the late Mr. Cooke, of Parsonstown, from Cloghan, a castle of the O'Moores situate on the banks of the little Rossna, about three miles to the south of the town of Banagher. The "Annals of the Four Masters" inform us that the castle was demolished "through fear of the English," A.D. 1548. The idol represents a rude female figure carved in limestone, and measuring 22 inches in height. It resembles others which occur in many of our old castles, &c., where they are supposed to have served as lucky stones in warding off the evil eye and ill fortune. For this reason they are generally found built into the walls over the arched doorways, and occur at Ballinahinch, Ballyfinboy, and Moycasky castles, Co. Tipperary. The castle of Lemanaghan, King's County, Timahoe, Queen's County, and in some few old churches that occupy in all probability the sites of early Pagan temples, to which these idols belonged. One occurs in the old church of Doroth, near Drogheda, another in the exterior of the eastern gable of the old parish church of Seir Kyran, King's County, and another in the old church of Rochestown, County Tipperary. These grotesque figures are known to the peasantry as *sheela-na-gigs*. With this he exhibited a very small and perfect bronze celt, the sides of which projected above the top, and so formed a depressed upper edge. This is a peculiarity commonly met with in Italian objects of a like kind, but is of extremely rare occurrence in this country. It was found near Enniskillen.

THE ROYAL IRISH ACADEMY.

A GENERAL meeting of the Academy was held on Monday evening at 19 Dawson-street. The chair was occupied by

W. M. HENNESSEY, Esq., F.R.S.

Rev. John O'Hanlon read a paper on the "Missing Book of Clonenagh." The rev. gentleman said he wished to bring under the notice of the academy some particulars regarding this valuable historical record, which apparently had not come under the observation of Irish scholars in their time, and yet there seemed fair seasons for supposing that a prized remnant of the past had not been destroyed at the commencement of the present century. Clonenagh was a monastery near Mountrath, in the Queen's County, and was erected by St. Fintan. Keating, in the preface to his History of Ireland, spoke of the "Book of Clonenagh" as amongst the records of first importance, and which survived to his time. The latest record he (Rev. John O'Hanlon) had been able to obtain regarding the existence of the monastery, dated back to the eleventh century. The book of the monastery, he thought not unlikely, had been kept by a family living on the tribe lands of Leix for several generations. The reverend gentleman then gave an account of the efforts he had made to obtain traces of the book. His great object, however, was to put some information respecting it on record, in order that the attention of literary inquirers might be directed to it, with a view to its recovery.

On the motion of the chairman, seconded by Mr. O'Flanagan, the paper was referred to council for publication.

Dr. Sigerson read a paper on "Sepulchral Urns and Buried monuments in the County Tyrone."

Sir William Wilde, Professor Sullivan, and other gentlemen discussed the paper, which was also referred to council for publication.

Dr. David Moore read a paper on the "Morphology of Sexes in some Diæceous Plants."

THE WORKING MAN IN AMERICA.

Mr. Thomas Connolly, stonemason (whose papers, published under the auspices of the Society of Arts, London, have been noticed in this journal), has addressed a letter to the editor of the *Daily Telegraph*, which we transfer to our columns:—

There is not a single State in the Union where you can so truly learn the character of the American people as the State of Massachusetts, or where those qualities which distinguish them from the peoples of Europe can more clearly be discerned. For an inhabitant of the British Isles it has an especial interest. Upon its shores the Pilgrim Fathers landed, simple men from Dorset and Devon, whose severe morality and ardent love of liberty, although a little intolerant, laid the foundation of this great republic, and moulded the thought and government of it. Upon its soil the mighty power of Britain received the first rude shock, which taught its king and people the impolicy of departing from just and free government, and well and bravely have her children fought, in the senate and on the battle-field, to crush the power of slavery in the land, and make labour free upon this continent. Here also was the workman for the first time emancipated from the serfdom of the middle ages, his labour rendered honorable, and himself dignified by education; and here at the present time is a population of over one million and a-quarter, every one of whom, with few exceptions, can read and write.

Nowhere on earth has a people achieved a greater triumph, under the disadvantages of soil and climate; for in a land limited in extent—145 miles by 70—with no natural resources except ice and granite, and a soil comparatively barren, only 20 per cent. of which is cultivated—336 cities, towns, and villages have sprung up, the homes of industry, happiness, and contentment. The face of the country looks beautiful in the summer time, its sea coast indented with numerous bays, and its rugged surface mostly covered with the foliage of stunted dark pine, hemlock, and birch, studded over with neat comfortable homesteads, villages of wooden houses painted in bright colours, and cities with their tall church spires, spacious factories, and substantial public buildings. This State is conveniently cut up with rivers, which, running over its rugged surface to the sea, supply splendid water-power to propel the machinery employed in her industries, while her railroad system connects every town with the rest, and affords facilities for their traffic. Although travelling is as cheap here as in England, those lines pay from 8 to 12 per cent.—a gain owing to the economy with which they have been constructed. At its western extremity the Green Mountains rise in parallel ridges about 25 miles apart, which diversify the scenery and attract the tourist. The land under cultivation is chiefly in small farms, the labour of which is done by the owner and his family, and the excellent markets which the cities and towns offer for the sale of their productions compensate in a measure for the poor fertility of the soil. Better cultivation is improving it. Men of science have directed their attention to its neglected state. The Board of Agriculture has established a college at Amherst, where 200 students at a time learn the science of farming, and each of the fourteen counties has agricultural societies on the same plan and for the same purpose as those in England. Nowhere on earth are sobriety, thrift, and cleanliness more apparent than in those homesteads, and nowhere can the effect of education on a rural population be more clearly discerned. In dress and manners they differ little from the well-to-do people of the cities and towns. Every village has its liberty pole and church, its school and lecture-hall. Like the mother country, the people of Massachusetts rely more on manufactures for their sustenance than on the cultivation of the soil; for, while the returns of 1865 give 68,000 engaged at agriculture, there were 271,421 persons employed at trades and in her factories. The next returns will not show much relative difference in the numbers employed, if we judge by a comparison of the two last; for although the production increased from 295,000,000 dols. in 1855 to 517,000,000 dols. in 1865, or 72 per cent., the population increased only 8 per cent,; the increase of wealth being accounted for by improvements in mills and machinery. Every article which can administer to the comfort or even to the luxuries of a people is manufactured here, from shoes and blankets to whiskey and revolvers, 180 different kinds being enumerated; and, although some produced are not equal to those in England, a high tariff procures a market for them throughout the Union, and enables the makers to live at the expense of other States. Every county is famed for some branch of business—even the little towns and cities have trades peculiar to them. Some employ only a few hands; but the manufacture of cotton, calico, mousse-line-de-laine, hosiery, woollen goods, the making of clothing and straw bonnets, the tanning of leather, the making of shoes and boots, the cutting of nails, the building of machinery, locomotives, and steam-engines, and the manufacture of fire-arms, are industries which employ a great number. The large factories are generally on the edge of some river, where water-power can be made available to propel the machinery; but provision is also made for steam-power when the water fails. The cotton mills on the Fall River, and on the Merrimac at Lawrence and Lowell, are equal to any in the manufacturing districts of England, and perhaps superior in their arrangements. A dam across the Merrimac at Lawrence gives a fall of 28 feet, and a short distance below it are the Pacific Mills, built of red brick in a sort of Venetian style, of which the main building is 800 feet long and seven storeys high. Two and a-half million dollars are invested in it, 60,000 dols. of which belong to the workpeople. It contains 100,000 spindles for cotton, with cleaning, picking, and carding machines to supply them; 16,000 spindles for worsted, 22 print machines, and 8,500 looms for weaving calico and mousseline-de-laine, 7,500,000 dols. worth of which is annually sold; 3,600 persons are employed—1,680 men and 1,510 women, the remainder being girls and boys between 10 and 18 years of age. The company do much to promote the comfort of their workpeople, by providing a library of 5,000 volumes for their use, and the establishment of a sick fund, to which all are bound to contribute; and by entrusting the management of the tenement lodging-houses to proper persons. But I very much question that English operatives would bear the same restraint.

Lowell, 26 miles from Boston and 13 from Lawrence, is also on the Merrimac River, close by the Pawtuckett Falls, which are 33 feet high. It is one of the best manufacturing cities in the Union, having over fifty mills of various kinds, in which 13 or 14 million dollars and 13,000 hands are employed, 9,000 of which are females. The Merrimac mills, five in number, and a set of print works, are the largest in the city. They employ a capital of 2½ million dollars and 2,500 hands, 1,800 females and 700 males. There are 105,000 spindles and 2,538 looms; 85,000 pounds of cotton are consumed per week, 490,000 yards woven and 545,000 yards dyed and printed. The grinders get 2 dols. currency per day of eleven hours, the stripers 1½ dols., the spinners 80c., and the weavers 90c. a-day. The printers earn from 3 dols, to 4 dols. a-day. This mill is about the fairest specimen of the factory system in New England, the machinery of the newest and best description, and the arrangements for the hands to execute their work perfect in every respect; the rooms are scrupulously clean, and the window-sills garnished with every variety of plants. The houses where the workpeople reside are the property of the company, who receive a rent for them, and regulate the price to be charged for board—viz., 2 dols. 75 c. for females and 3 dols. for men. I went through a double house where about 80 females were boarded, and for which the parties who managed it paid 316 dols. a-year. Everything was nice and clean, the rooms set off with good furniture and pictures, and the arrangements for dining as complete as in any hotel; but it was only a barrack after all—a fact which marks the principal difference between the factory system of New and Old England. In the latter the social family life is not broken up; in the former, except in a few instances, it is so as a rule. The workpeople of the factories in the Old Country generally marry; here marriage occurs in few cases. Formerly the labour in the mills was chiefly done by native Americans; now the English, Irish, and Canadians divide it with them. The Fall River mills, in number and extent, bid fair before long to equal those of Lowell, being at the eastern terminus of the Long Island Sound steamboats. There are great facilities for shipment to New York and other ports. The population of the town, which doubled during the war, is about 23,000; it contains 22 mills, chiefly built of granite, which employ a capital of 7,000,000 dols. and 7,500 hands; there are 590,000 spindles and 12,800 looms, which manufacture 150,000,000 yards per annum. The pay-roll of the different companies exceeds 230,000 dols. a month.

But of all the industries in this State, there is not one, in my opinion, which she can so fairly claim as indigenous to her soil, or in which she could so successfully compete with other nations, if not excel them, as those of the tanning of leather and the making of boots and shoes. They are industries which even the blighting influence of protection cannot destroy, with a tariff dead against them. At the present time there are about 380 establishments for the tanning and curing of leather, which employ over 4,000 hands, and annually produce over 16,000,000 dollars' worth, and in manufacturing 32,000,000 pairs of boots and shoes per annum, valued at over 53,000,000 dols. There are employed 33,000 men and 13,000 women. Before 1860, boots and shoes were chiefly made by hand; here they are now as much an article of manufacture by machinery as the spinning or weaving of cotton, and at a saving of 25 per cent. in the item of labour. The trade is principally in the centre of the State, each city, town, or village adopting some special branch. Milford, Hopington, Hollistone, and Medway make men's thick boots; Randolph, Stoughton, Braintree, and North Bridgewater make men's calf boots; North Brookfield and Spencer, men's brogans; Haverhill, Georgetown, and Topfield, men's thin shoes and half-boots; and Sangers, Marblehead, Stoneham, Wakefield, and Lynn, manufacture women's shoes and boots. Some of the factories employ 600 or 800 hands, and all are furnished with the best machinery, by the aid of which they turn out the work so quickly, that I might have had a pair of ladies' boots made for me while I was looking over the place. In the basement of the building the hides of leather and the cloth are stamped out to the required patterns, and fitted ready for the women to close them with their sewing machines; after which they are lasted by men, who are confined to that business, at 5 cents a pair; next, the sole is pressed to its proper shape with a machine, and stitched on with another; after which the edges are pared and pressed, then sand-papered and polished on the soles; after which the heels, which are already made, are nailed on for another man to pare, and another to polish and gloss the edges. They are then inspected, after passing through about twenty different men's hands. Most of the men employed were native Americans, who stated that they are more comfortable at their work, and earn more money with less labour, than on the old system of handwork, their wages ranging from 15 dols. to 24 dols. a week. I see no reason why the system is not more generally adopted in England, other than a want of knowledge and enterprise on the part of employers. All the machinery can be had for money, and I feel certain that English workmen could adapt themselves to its use, and that their condition would be bettered by its introduction. Now that our members in the House of Commons are discussing an Education Bill, let me remind them that the power by which Massachusetts exercised such influence in this Union, and overcame the difficulties of soil and climate, is her public schools; and fully is it recognized by her Government, for they are increasing them in number and efficiency every year. In the past year they added 99, making a total of 4,937 public schools, at which 248,425 children attended, out of 266,745 persons in the State, between the ages of 5 and 15 years; 3,450 under 5 years, and 23,377 over 15, also attended the public schools, the total cost of which for the last year was 5,070,000 dols., or at the rate of 19 dols. a head for every child between 5 and 15 years of age in the State. This is how the Yankees train their children, and how they invest their money; and, you may rest assured, if they did not see a return from it they would not long continue to do so. Let England, with all her wealth, try a good investment in the same manner, and I feel certain her workpeople will continue to be where, even without education, they have always been—in the front rank of civilisation and industry.

TREES AND SHRUBS IN TOWNS.

The beneficial action of trees and shrubs (said Mr. Ingram, in the course of an address delivered in Leicester) in a town consists not only in the work the roots perform of removing decaying matter from the ground, but they effect a further good. Plants absorb carbonic acid, and give out oxygen; and as in towns the air is vitiated by carbonic acid and other products of combustion, the multiplication of trees, shrubs, and plants, large and small, increases the volume of oxygen, which is the vital principle of the air, and so adds to the salubrity of every street or square in which they grow.

Trees are not alike in taste or constitution. Adapted by nature to suit the varying circumstances found in the world, some thrive best in rich, others in a poor silicious soil; some delight in a calcareous soil; others abhor it: hence all trees are not equally suited for planting in towns. Accustomed to the pure and refreshing breezes of the mountain-side, some of the pines and firs fail to grow in an atmosphere not altogether pure. The cedar of Lebanon is a tree of wonderful adaptability, and should be introduced in the new plantations on the race-ground. The Wellingtonia appears to thrive everywhere, as does deodar and Lawson's cypress. Deciduous trees, with large woolly or hairy leaves, are not suited for towns; the particles of carbon that float in the air resting on the leaves, often destroy them. The smooth-leaved lime, the Oriental plane, the sycamore, elm, ailanthus, chestnut, and acacia are amongst the trees best suited for planting in towns. The evergreen oak is a noble tree, and it might be planted experimentally. The aucuba, holly, lilac, laurustinus,—all do well in town gardens, and recent experience shows that many plants do exceptionally well, even in the smoke of great cities like London: the chrysanthemum is an example.

There are many climbing plants that, while they embellish a house, purify it, sending roots about its walls, where impurities are often found, and thus assisting to check all unwholesome exhalations; amongst which may be enumerated ivy, Virginian creeper, clematis. Fruit trees planted against the wall of a house do more than embellish it, although the vine is sufficiently handsome to grow even without hopes of fruit; it is one of the most valuable sanitary plants that can be employed; its roots travel far in search of the pabulum they love, and nothing is too gross for a hungry and healthy vine. What more striking illustration is wanted of the cunning alchemy of a fruit tree; who would dream, looking at this dry stem and those dry roots, that so wonderful a production as a luscious pear or a juicy bunch of grapes could be the vital result of their action.

We speak of the impurities of a town, and although the causes actually arise within it, the effects extend beyond its limits, and particularly when a river passes near, which has been made a common sewer. Towns are as often injured in sanitary respects by the accumulation of matters which have been permitted to increase around them as by internal pollution. The palliative immediately suggested by the proximity of low lands surcharged with sewage is heavy cropping. I would intersect the fields with trees, such as willows, poplars, and alders, abolish permanent meadows, and grow mangold wurtzel, turnips, beet, Italian rye grass, cabbage, and such quick-growing vegetables, and keep the land constantly cropped. The poor sandy wastes of Barking Creek, in spite of the counter predictions of Liebig, have, when irrigated by London sewage, grown wonderful crops of rye grass.

A remarkable instance of the power of plants to divert malarious exhalations was lately related to me. Washington Observatory, U.S., is situated in a deadly marsh: the observer's assistants were killed off wholesale. Sunflowers were sown all round, and the period of greatest luxuriance was about the time when fever was most rife; the happy result was that fever disappeared, the plants luxuriating on the poison that had killed the unfortunate astronomers.

Trees draw up from the depth of the earth moisture that, charged with animal or other impurities, would otherwise appear in miasmatic exhalations; the moisture oxygenised by vegetable action is liberated into the air free from taint, and fit for human lungs. Trees present in their myriad leaves an immense evaporating surface, and the influence they exert on climate is greater than is commonly supposed.

However animate and instinct with life the outward or aërial development of a living tree may appear, its terrestrial action is not less interesting. Although we cannot see, we may imagine the eager progress of the roots in search of food, penetrating the dark recesses of the soil, or rising to the surface where the ground is warm and rich, or stretching wide, led by some wonderful instinctive power towards soil more congenial than it found near the tree. The root action of a tree is not only wonderful in the mechanical force it exhibits in feeding the hungry living thing it sustains, but in the power of selection and repulsion possessed by these functions.

It has occurred to me that trees or their roots might be employed as filtering machines about wells open to the suspicion of being tainted by the percolation of foul matters into the water within them; a network of roots round the well would probably keep everything of a nature calculated to render the water impure from passing in. Southey, in describing the Well of St. Keyne and the efficacy of its waters, gives us a good practical fact with his beautiful poetry.

As we have seen, vegetable life is stimulated by the application to it in the soil of the various waste and refuse substances, the wreck of humanity, the decay of animal matter, the results of the attrition of civilized life with the forces of the world. The solution of the question as to the disposal of the sewage may appear more practicable; we have hungry ground that might profitably be enriched by the waste of cities; we have plants, the produce of which might be increased by being fed on the same substances; but that obstacle to ponderable bodies, space, intervenes; the collection, transport, and distribution of manurial matters from our great cities to our hungry soils is surrounded with difficulties; but as these are great, so must our exertions be to overcome them.

The earth is ready to absorb and deodorise matters up to a certain extent. The plants are ready to seize the substance placed in the earth and prepared by it for their food. Let, therefore, the earth and the plant, as the means provided by nature, be employed both in town and country as far as practicable. The result will be purer air, better water, and enriched soil, that will give our teeming millions greater resources of food, which may be regarded more highly when it is considered the result of native skill, intelligence, and industry.

THE WELLINGTON MONUMENT, ST. PAUL'S CATHEDRAL, LONDON.

In the House of Lords, Earl Cadogan moved for copies of any correspondence which might have recently passed between Her Majesty's Chief Commissioner of Works and the surveyor of St. Paul's Cathedral, with reference to the monument to the late Duke of Wellington in course of erection in that church; a return of copy of agreement entered into between the Board of Works and Mr. Stevens, the artist selected to execute the work; payments made to Mr. Stevens on account of the work itself, or to others for purposes in connection with it; dates of payment; sum originally voted by Parliament for the erection of the monument; and balance remaining available for the completion of it. The Marquis of Lansdowne said the Government would not object to the return if the noble lord pressed for it, but it being expected that the work would be completed within a year, and it being probable that the original terms would not be adhered to, it would be better to await its completion. Earl Cadogan expressed his belief that unless a further sum was voted by Parliament the work could not be completed, for of the £14,000 originally voted all but £1,000 had been expended, and of this a considerable portion would be absorbed by expenses other than those of the monument itself. Four years ago, on his calling attention to this matter, an assurance was given that the work was in a forward state, and he feared there would be still more delay. The commission was first given to the artist in 1858, one condition being that a complete model should be produced and placed in the cathedral in a very short time; but this condition was modified by Lord J. Manners when First Commissioner of Works, who, in view of its gigantic size, proposed that only a portion of it should be so produced, and even this had never been done. It was not, moreover, till 1867 that a model was completed, and unless a further grant was furnished there was no more prospect than four years ago of the completion of the work. The Marquis of Lansdowne was informed by the First Commissioner that the monument was likely to be completed within the present year, and it would, therefore, be better to await this before producing the return or inquiring into the execution of the work. After some further conversation, the Duke of Richmond thought the return would show what the available balance was, and would clear up the doubts which appeared to beset the question. Notwithstanding, therefore, the apparent disinclination of the department, it would be better that it should be produced. The motion was then agreed to.

Cork School of Art.—A silver medallion has been awarded to Mr. Jeremiah Mullins, coach-painter, and student of the Cork School of Art, by the Worshipful Company of Coachmakers and Coach Harness Makers of London, for the best drawing and painting executed in competition with the students of Schools of Art engaged in these trades throughout the United Kingdom. The award was made by the Science and Art Department, and accompanied by the following letter:—

"Science and Art Department,
"London, 29th March, 1870.

"Sir—The department has pleasure in transmitting to you, at the request of the Coach Makers and Coach Harness Makers' Company, the silver medal of the company, which has been awarded on account of your success in drawing at the examination held by the department in March and April, 1869. The award has been adjudged in compliance with the resolution of the company, passed at a meeting of their court, held on the 4th March, 1869, viz., 'That the silver and also the bronze medal of the company should be placed at the disposal of the Science and Art Department, to be presented to any person or persons (actually engaged in the trade of coach building) who shall pass the best examination in freehand drawing.'" G. F. Duncombe."

"Mr. Jeremiah Mullins, School of Art, Cork."

NEW CATHOLIC CHURCH, HOLYWOOD, COUNTY DOWN.

With this No. we give an illustration of the proposed new Catholic Church, Holywood, for the Rev. J. O'Laverty, P.P., M.R.I.A. The design was selected in a competition to which we referred in our number for August 1st, 1869, and at the same time gave a description of the building, which we need not reproduce, as the drawing speaks for itself. The church was designed to suit a plot of ground adjoining the Presbyterian Church (the ground was the generous gift of Mr. Robert Read, of Holywood), and as the flank elevations would be almost entirely concealed by the adjoining buildings, the front elevation has been the chief care of the architect, Mr. T. Hevey, Belfast, whom we may safely congratulate on having produced a design which will bear favorable comparison with any we have as yet seen.

HOFFMANN'S ANNULAR KILNS.

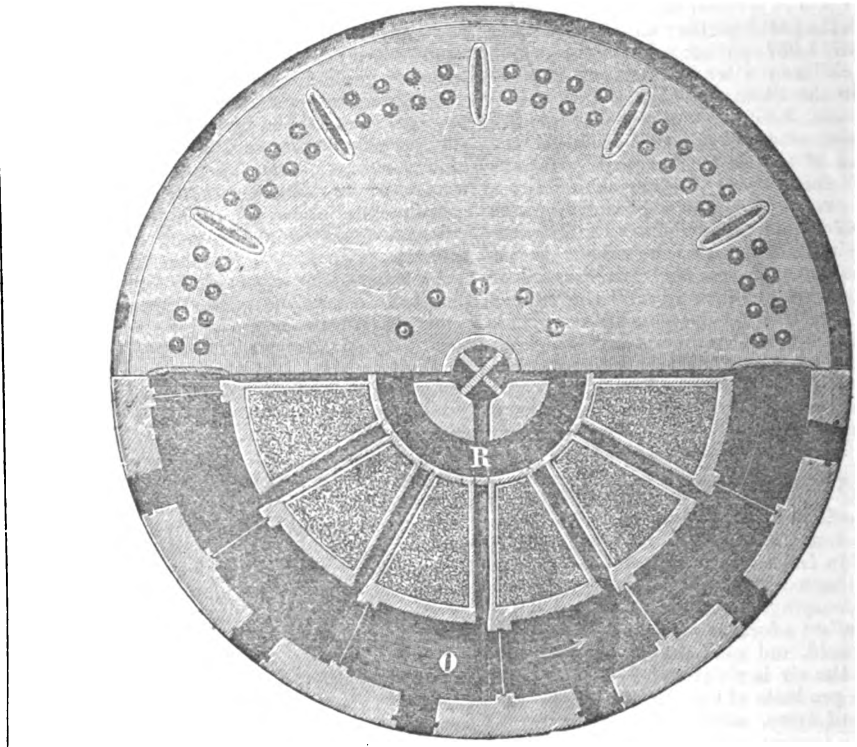
The Hoffmann Kilns for burning lime and bricks erected in and about Belfast have, for some time past, excited considerable interest, in consequence principally of the great saving in fuel (from 60 to 80 per cent.) effected by their use—one shilling's worth of common coal slack being found sufficient for each ton of lime or 1,000 of bricks burned. Besides this great advantage, the burning is most perfect, and waste is altogether avoided. The Belfast Hoffmann bricks are well known as the most perfect ever brought into Dublin; and the production of lime from Mr. Murland's immense kiln, on the same principle, in the County Down, though very large, is found to be quite inadequate to the demand. We need not speak of the production of the Dublin Hoffmann kiln; those paying it a visit can judge for themselves.

In an article in the *Engineer* of the 3rd of December last the following description of the Hoffmann kiln is given:—

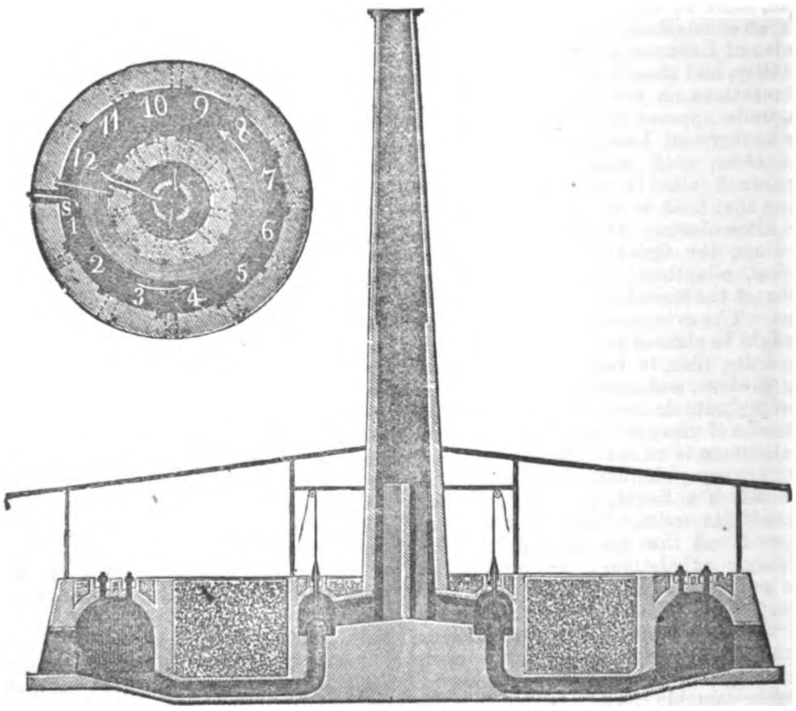
The extraordinary and widespread success of these kilns, the beauty of the scientific principles they so ingeniously embody, and the many fresh applications of which they are capable, are well deserving a careful study. The kiln substantially consists of a long railway-tunnel-shaped passage, forming a long annular channel or ring. This ring is divided into twelve, or, as in the case of the oblong annular kiln, fourteen compartments which may be made to communicate or to be separated from each other by the raising or lowering of a partition or damper. These intercepting dampers are lowered in grooves built into the walls of the furnace immediately after each flue; or inserted from the side through the doorways. To each compartment there is an entrance doorway, which can be closed with temporary brickwork. Flues lead from the bed of each compartment to the central smoke chamber, which communicates by a main flue with the chimney outside. . . . . . The state and progress of the fire can be at any time easily seen through the apertures at the top, down which the fuel is fed; and as the draught is under perfect control, the heat can be at once raised or lowered as may be required. The low temperature at which the gases leave the kiln is indicated by the fact that a high chimney for getting up the draft is required. There is thus a perpetual current, so to say, of bricks, which is brought slowly to revolve against, and in the contrary direction to, a perpetually revolving draught. In the green stage of the bricks they thus come in contact with air at a comparatively low temperature, and then gradually advance towards higher temperatures until they are at last burnt. Each stack of bricks to be burnt is therefore most ingeniously made to combine successively—(1) the functions of a grate with bars; (2) of a Siemens regenerator for heating the air to be burnt; (3) of a drying-room for themselves when green, and (4) of a cooling-room for themselves when burnt. It is impossible not to enjoy the examination of such an exemplification of the dominion of mind over matter.

Each day one chamber is emptied of its burnt and cooled down bricks and another chamber is filled with green goods. The height of each chamber is only from 8 ft. to 9 ft., or about that which a man can reach with his hands, so that the bricks can be easily taken in and out, and they are not subjected to too great a weight when at a high temperature. Any repairs can also be at once done to any one of the chambers as it gets emptied in its turn.

In every process of treating clay, with a view to drying it in the open air or to burning it, it is absolutely necessary to carry out these operations gradually at the risk of cracking and splitting the goods. This kiln, from its very gradual action, and absence of sudden changes of temperature, produces no "wasters" from these causes, and the bricks can also be burnt in a much more moist state than in ordinary kilns, as the heat is very gradually brought to bear upon them; though of course it is always best to set them when in as dry a state as possible.



By means of the existing air-tight envelope formed by the sand on the top and sides, and by hermetically closing the flues and feed-pipes, the kilns can be closed up and left to themselves for five days and more. They can therefore be easily left alone for twenty-four hours, and thus they need not be fired on the Sunday. This is also evidence of the ease with which they can be fired. They do not require skilled or "union labour;" and here science has again done away with that empirical skill often acquired, and sometimes exerted, at the cost of much waste. The cost of labour is, in truth, reduced both as to quality and quantity.



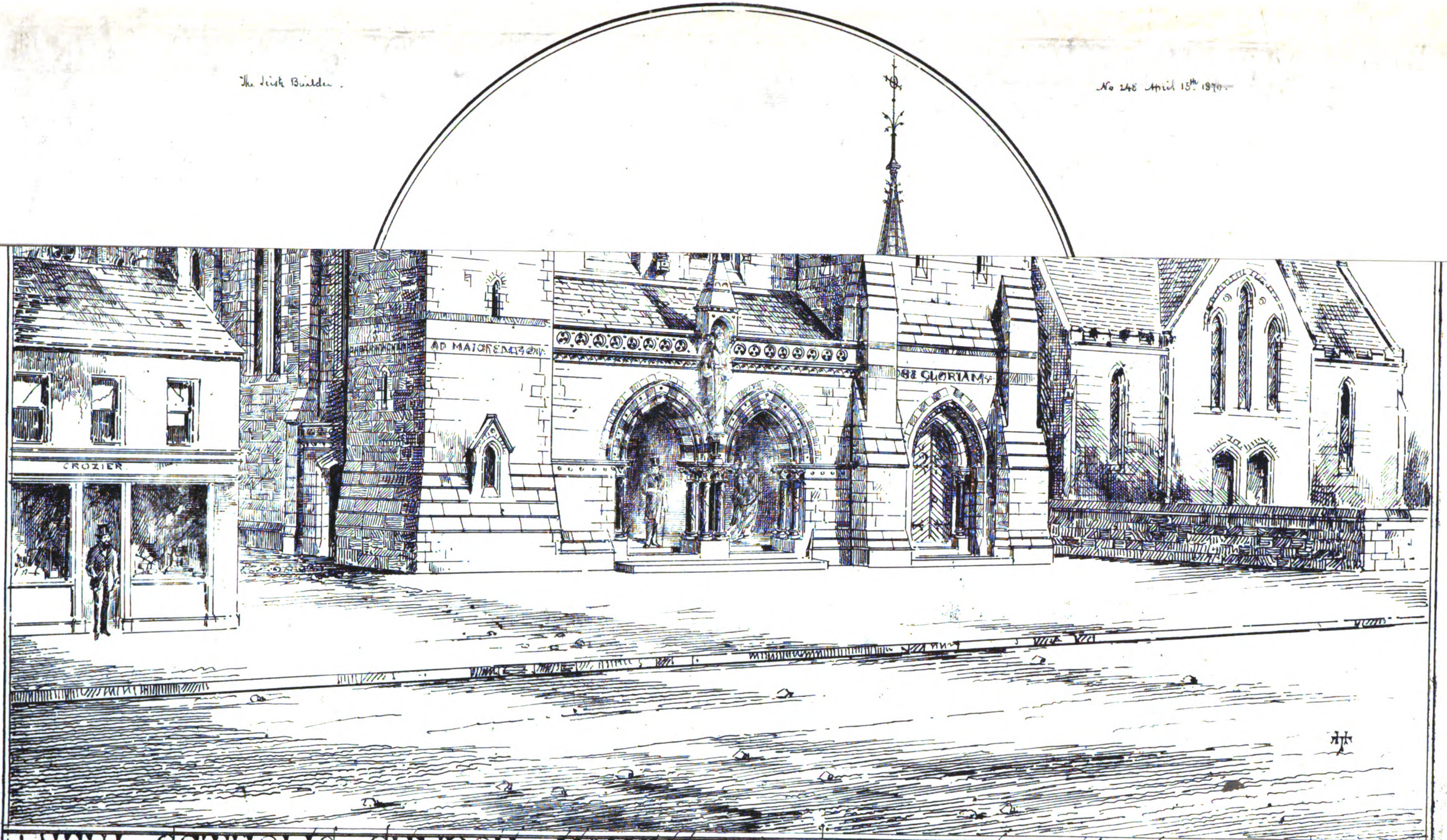
In pottery and similar kilns the fuel is encased in open retorts, out of which the gases can flow without the fuel coming into contact with the goods.

ANNULAR KILNS AND FURNACES.

In all there are not less than five hundred of these kilns at work in different parts of the world—Europe, the United States, India, and Australia. In England and her colonies alone there are upwards of one hundred in use, and

The Irish Builder.

No 248 April 15th 1890.



NEW CATHOLIC CHURCH, HOLYWOOD, Co. DOWN. T. HEVEY. ARCHT.

Rev. J. O'Laverty, P.P. M.R.I.A.

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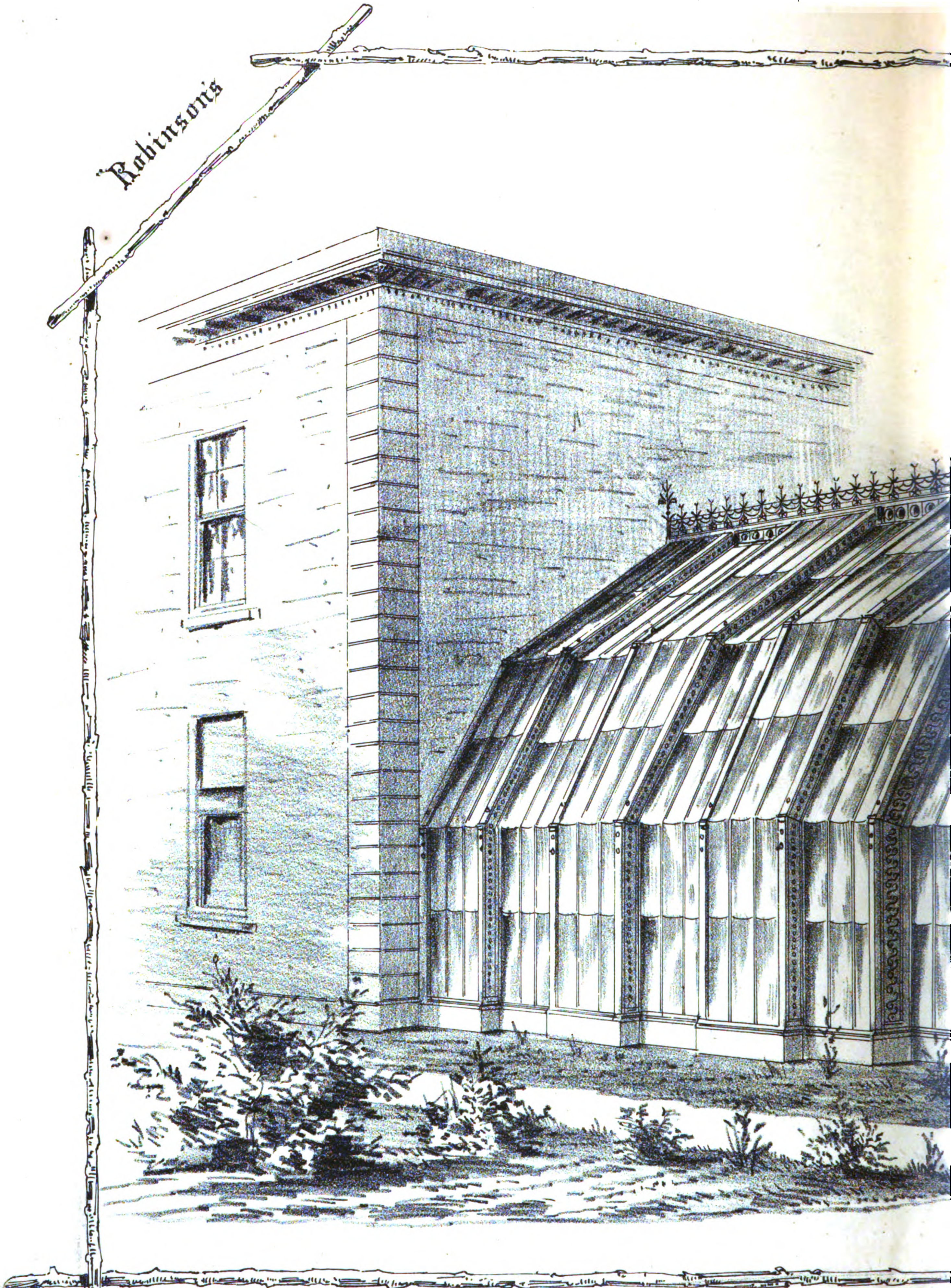

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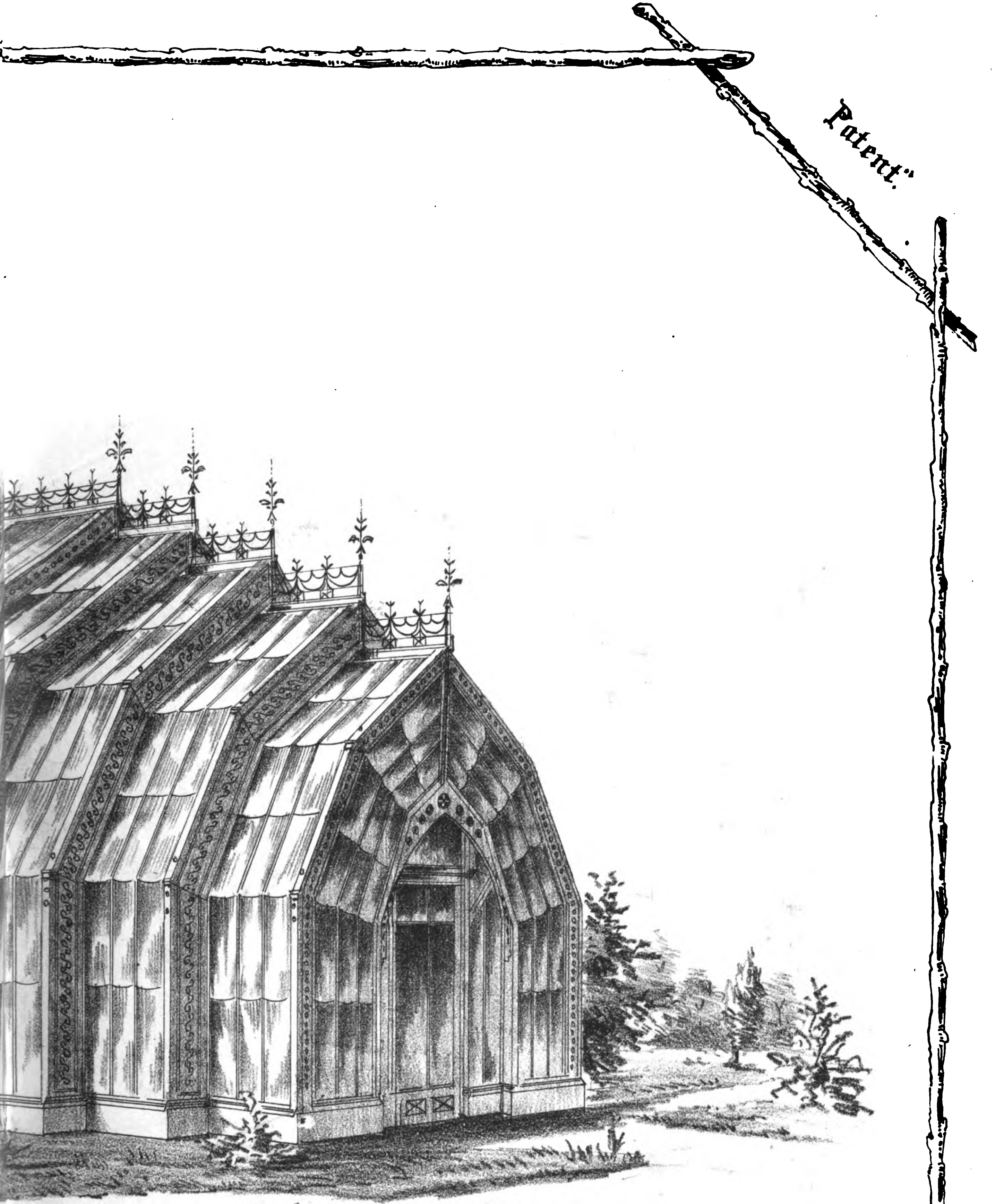

WALLER, LITH.

N. 11, Westland Row, Dublin.
ND MANUFACTURER.

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the power of production within merely England and Ireland can be reckoned at nearly one million of bricks *daily*. Our Admiralty use five, the Indian Government several. More than one hundred oblong kilns are at work. At Berlin, where the inventor is living, a society composed of the users of these kilns has been established, and they issue a quarterly volume containing very sound and elaborate papers on the manufacture of bricks, pottery, lime, and cement. In Germany the kiln is, in fact, not merely used for burning bricks and lime, as is almost entirely the case in England, but also pottery and Portland cement. Excellent results, as regards quality and quantity of production, have been obtained by Messrs. Dykerhoff, of Biebrich, and others, by the application of annular kilns to the production of Portland cement. The plan adopted in Germany is to form this important cement into bricks, and then to burn them in the usual way. The terra-cotta work of the new market at Shrewsbury was burnt in these kilns by Mr. Ensor, of the well-known fire-clay works near Burton-on-Trent. Amongst its other important applications are those for roasting iron and other ores and making coke. The very easy way in which the draught can be regulated and the temperature increased and diminished, also point to its application to the important purpose of annealing malleable iron castings. Successful experiments in this direction have been carried out already.

The powers of production of these kilns vary from 4,000 to 40,000 bricks daily, and for lime from 10 to 100 tons per day. The larger sizes are generally made of an oblong shape, as the circular form covers up too much ground. The absence of smoke from them allows their being set up in localities where other kinds would be indicted as nuisances. Messrs. Kelk, Waring Brothers, and Lucas were thus allowed to set up two kilns at Kensington for making up the clay from a railway cutting in the Metropolitan Railway direct. During two years they there made 25 millions of bricks. The consumption of smoke is also obtained in a legitimate way, and not, as is often the case, by an undue consumption of fuel. We could scarcely have believed in the great saving of fuel effected without the evidence before us. As Professor Thompson, of Belfast, has observed, "for both the brick burning and the lime burning, the saving of fuel, relatively to that consumed by the ordinary methods, is such as to appear at first sight almost incredible." Messrs. Waring Brothers erected some years ago, for only eighteen months' use, a kiln at King's Cross, under the superintendence of Mr. H. Wedekind, the agent of Mr. Hoffmann. As compared with the common Scotch kiln it is stated that as regards labour in burning 1,000 bricks there was a reduction form 1s. 6d. to only 6d.; in coals, from 7s. 10½d. to 1s. 6d.; and in loss by "wasters," from 1s. to *nil*, or a total saving of 8s. 4½d. per 1,000. Messrs. Joseph Cliff and Son, the well-known fire-brick makers, near Leeds, inform Mr. H. Chamberlain, the agent for the North of England, that they only use one-third of the fuel they did in ordinary kilns. In a recent letter the Swan Banks Company, near Halifax, who have five of these kilns, state that while they formerly paid 5s. 1d. per 1,000 for burning in their old kilns, they now pay only 6½d.

ON THE THEORY OF BRICK BURNING.

We give elsewhere a description of and the results obtained with one of the most successful and economical kilns ever used for burning bricks and similar ware, and we will now attempt to deduce the principles upon which these results are obtained. There is some difficulty in establishing a perfectly accurate basis of comparison, as certain clays require much more heat than others, besides other difficulties. In furnaces such as common brick and other kilns working at high temperatures, there are two obvious sources of thermal loss—the heat carried by the fire gases up the chimney, and the heat contained in the bodies to be heated at their exit from the furnace, or heat which is not merely lost in itself, but also causes a loss of time and work in cooling. The hot air from ordinary kilns often passes away during a considerable part of the process at a red heat. As regards the heat left in the bricks themselves after burning, it can easily be imagined what a great store-house of heat is contained in the several hundred tons of brick at a white heat operated upon in an ordinary kiln. Amongst the bodies to be heated before any useful effect can be produced is also necessarily the kiln itself. Another important cause of loss of heat is therefore the loss caused at each interruption in the working of an ordinary kiln. Almost the whole of the heat taken up in the mass of masonry is lost, as it is necessary to wait till the kiln be cooled down before proceeding to charge it afresh.

A pretty accurate estimate of the expenditure of heat in burning bricks may be formed by comparing the quantity of fuel actually used with the quantity of heat theoretically required. The following data will enable us to make the calculation:—1,000 bricks ready for the kiln weigh about 10,000 lb., and lose during burning about 15 per cent., or 1,500 lb. One pound of water requires for evaporation 652 units of heat. The steam escapes from the kiln at a temperature of about 300 deg. Cent., and it must, therefore, be heated from 150 deg. to 300 deg. Cent. The specific heat of steam is ·847. The bricks themselves, weighing 8,500 lb., are heated to about 1,200 deg. Cent., and the specific heat of clay may be taken as ·200.

These data give the basis for the following calculation made by Herr Versmann, a German savant, formerly assistant to the late Mr. Graham, of the Royal Mint:—1,500 lb. of water to be converted into steam require $1,500 \times 652$ units of heat $= 978,000$ units; 1,500 lb. of steam to be heated to 300 deg. Cent. require $1,500 \times 150 \times 0{\cdot}847 = 190,575$ units; 8,500 lb. of dry bricks to be heated to 1,200 deg. Cent. require $8,600 \times 1,200 \times 0{\cdot}200 = 2,040,000$; total, 3,208,575 units of heat.

Now to burn 1,000 bricks in a common kiln certainly not less than 10 cwt. of coal are required, or an absolute heating effect of 8,000 units, which is equal to $10 \times 112 \times 8,000 = 8,960,000$ units of heat. Therefore the proportion will stand thus:—Units of heat theoretically required, 3,208,575; units of heat practically required, 8,960,000; difference, 5,751,425, or 64 per cent.

This calculation shows an actual waste of 64 per cent. of heat; but even this is not all, as we must not forget that the whole of the heat required to raise the temperature of the ordinary kiln to 1,200 deg. Cent. is entirely lost in the subsequent cooling. The most serious loss is chiefly due to the following causes:—The kiln, being allowed to cool after each burning, the whole brickwork must be heated afresh each time. A strong radiation of heat also takes place from the walls during burning. Further, a large amount of air is uselessly heated in the fireplace at the beginning, and the flame escapes too directly and too rapidly towards the end of the operation. Now all these difficulties are overcome in the construction of Hoffmann's kilns, because in them the air required for sustaining combustion is passed over bricks which have been burnt a day or two before, and is heated to at least 300 deg. Cent. The waste heat, therefore, instead of escaping directly into the chimney, passes over air-dried bricks, which lose all their moisture and actually become red-hot before any fuel is used. The vast importance of these two points can easily be shown by calculation. One cwt. of coal requires for complete combustion about 1,000 lb. of air, which are brought to the temperature of the fireplace at the expense of part of the coal. The amount of heat required to raise the temperature of 1,000 lb. of air to 300 deg. Cent. is the same as will raise $0{\cdot}2669 \times 3 \times 1,000 = 800$ lb. of water from 0 deg. to 100 deg. Cent. Taking the heating effect of the coal as equal to 8,000 units, the required heat will be obtained by $\frac{800 \times 100}{8,000} = 10$ lb. of coal, or about 9 per cent. of the coal to be burnt. The benefit of utilising the waste heat is, therefore, twofold—(1) the moisture of the bricks is converted into vapour; and (2) the heat accumulates in the bricks.

One thousand air-dried bricks contain, as as stated above, about 1,500 lb. of water, which require from 1¾ per cent. to 2½ per cent. of coal for evaporation, or about 25 per cent. of the whole quantity of coal required for burning 1,000 bricks. The heat accumulated in the bricks may be estimated by assuming that the bricks require to be heated to 1,200 deg. Cent., and that the first 300 deg. Cent. are furnished by the waste heat, which is equal to 15 per cent.

There would thus be a saving of, say, 59 per cent. in fuel by the simple arrangement for heating the air and utilising the waste heat. The heat is also utilised in the most scientific manner possible. As the transmission of heat from a hot body to a cooler one is in proportion to the difference of the temperatures existing between them, it is an axiom universally attempted to be carried out in all applications of heat to drying and warming bodies, that (say) a heated current should be applied to the body at its hottest stage; and that, when at a lower temperature, it should come in contact with the body intended to take up heat when at its lowest stage of temperature.

In the Hoffmann kiln there is yet another important source of saving in the fact that the moisture is driven into the chimney, and is never carried over the fuel, uselessly conveying away, as it would do, enormous amounts of latent heat. The effects of moisture in combustion are well known in the case of cold-blast furnaces. These work much better in cold than in warm weather, as the cold air then contains much less moisture. Another source of economy of fuel is that the most inferior qualities—any sort of fuel, in fact—wood, turf, small coal—can be used. This is due to the fact that the combustible is merely dropped down into compartments containing bricks already at a high temperature, and supplied with air already heated. The carbon can immediately combine with the oxygen, and the heated gases thus quietly revolve round to the next compartment. Lastly, amongst the other influences rather difficult to estimate with exact precision, but nevertheless in action, may be reckoned the influence of the particular construction of the kiln in relatively diminishing the radiation from the brickwork of the furnaces.

THE ROYAL GEOLOGICAL SOCIETY OF IRELAND.

A GENERAL meeting was held on Wednesday evening in the Museum Buildings, Trinity College, the Rev. Maxwell Close in the chair. Dr. Macalister (hon. sec.) read a letter from M. Coumbary, director of the Imperial Meteorological Obervatory at Constantinople, stating that a large meteoric stone had fallen at Mourzouk, south of Tripoli, in North Africa. When it fell it emitted a number of sparks and explosions which so frightened a number of Arab soldiers in the neighbourhood that they fired their guns at it. This stone is about a metre in diameter, and seems to be of pure meteoric iron. The Director of Affairs in Tripoli (M. Carabella) states that in the district of Waddad, in North Africa, the Sultan and the chief men of his court use iron weapons which are made from meteorites, which are said to fall frequently from the sky in that district. In reply to the chairman, Dr. Macalister stated that the communication had been made to one of their members, Mr. Scott, and he believed the meteor in question would be forwarded to this country for examination. Dr. Emerson Reynolds, V.P., exhibited a perforated crystal of Galena. The crystalite, which forms a perfect hexagonal prism, was found in a vein of cackspar near Tullamore, and was doubly interesting because of its singular perforation, and showing a somewhat close relation between the nonemetric and diemetric and hexagonical systems. Mr. S. Yeates exhibited a number of pocket spectroscopes suitable for use in examining minerals.

RAILWAY REFORM.

We believe that the first step towards railway reform must be a reform in the management. Few persons who, from duty or inclination, have investigated the details of the management of any considerable line of railway, can have failed to notice the enormous ratio the expenditure bears to the revenue. This it is that accounts for high fares and high rates of carriage; and it is not too much to say that the public will experience no relief in either direction until the management of railways is conducted on more economical principles. This discussion has hitherto been confined almost solely to the question of passengers' fares, and little, if any, attention has been given to the equally important branch of the subject which embraces the carriage of goods. We say equally important, although, when we look at the enormous quantity of goods which must be conveyed from one point to another, as compared with the number of persons who may or may not travel, as their interest or pleasure determines, it would appear that a reduction in the rates of carriage of goods is the more necessary benefit of the two. Cheap travelling is highly desirable, and business is promoted by any increase in the facilities afforded for getting from place to place at the most moderate outlay, and in the smallest space of time, but no reduction in the price of a railway ticket can make up to a very large class of people the large additional cost added to goods by the present high rates of freight. . .

There is, perhaps, hardly a business carried on within the confines of this kingdom which is not dependent, to a greater or lesser extent, upon railway carriage. Whether the seat of a manufacture be at Aberdeen or at Falmouth, at Grimsby or at Galway, the supplies of the raw material inwards, and of the finished material outwards, must, in nearly every case, pass through the hands of a carrier; and, although the cost of such carriage is in many instances but a small percentage on the value of the article carried, in the case of cheap commodities it forms a serious item of cost—often great enough in amount to make the production of an article impossible in one locality, or profitable in another, where the distances are less considerable.

High rates of carriage contain an element of evil which is highly injurious in a great commercial community. They limit the market of the trader, and force him to deal in an inferior article, because he cannot afford to pay the high freight he would have to give if he sent his orders farther from home. A tradesman in business in Warwick will thus be compelled to seek his supplies in Birmingham, in preference to sending his orders to London—not because the Birmingham goods are equal or superior to what he would receive from London, but owing to the difference in the rates of carriage between the two places. It may be said that if the London goods are so much better in quality they should bring a better price, and so restore the discrepancy caused by the difference in the cost of carriage; but how rarely can a tradesman fix the price of an article in general request? If he demands a higher price than usual, his neighbours will make capital out of the circumstance, and undersell him immediately.

So important is this question of carriage that many manufacturers offer to meet the difficulty by delivering orders carriage paid. This course is not altogether satisfactory, inasmuch as it is merely transferring the burthen from one shoulder to the other. The manufacturer's motive is to secure custom, and not to pay the freight-bills of needy purchasers; and whatever inducement is held out to effect sales finds its *quid pro quo* in the invoice in some other form. "Carriage paid to any part of the United Kingdom" is, therefore, a euphemism for inferior quality or other commensurate drawback. Now and then it happens that, the seat of manufacture being in a district where rents are low and labour is cheap, the manufacturer is really so advantageously placed that he can afford to give advantages equivalent to the cost of carriage between his works and the market taking his goods. These are exceptions to the rule, and for all practical purposes it may be safely assumed that high rates of carriage tend to restrict consumers to a comparatively narrow circle of supply.

Where the line should be drawn, and at what rate or rates inland carriage should be fixed we are not prepared to say, nor is it material to attempt to define what practical experience can alone determine. One thing, however, is quite certain, that the rates of carriage now chargeable on merchandize are much higher than they ought to be, and that the time will come when there must be a wholesale reduction on all lines of railway. . .

The great cost of railways, the enormous outlay in their administration, and the excessive expenses incurred in maintaining the rolling-stock, and keeping the permanent way in order, may be pleaded in defence of the existing system; and this brings us to the point from which we started, that high rates of freight and high passenger fares are the natural result of the costly and extravagant manner in which railroad business is conducted. The reform must begin with the executive, and until that step is taken we doubt whether agitation will accomplish much, either in the way of securing the carriage of goods at more moderate rates, or in procuring so large a reduction in railway fares as some people look upon as desirable.—*Grocer.*

MESSRS. MAGUIRE AND SON'S, DAWSON-STREET.

The extensive additions and improvements lately effected in this establishment warrant us in taking special notice of it at the present time. For more than a century 10 Dawson-street has been a hardware store, and in its rere still exists the old factory wherein large contracts were carried out, even so far back as the last century; amongst other works of importance, the iron railings at present enclosing St. Stephen's Green were wrought in 1815. The great increase of business consequent upon a reduction in prices in 1865, induced the firm to make arrangements for extending their premises, and for dividing their establishment into departments, viz., "the house furnishing department," "the builders' ironmongery and marble department," and "the manufacturing and engineering department." These three leading departments, although totally distinct in management, are personally superintended by the firm. To the house furnishing department nine new showrooms have been added; one room is devoted to the display of electro-plate of A 1 quality, a splendid stock of which is always on view, consisting of epergnes, vases, urns, &c., and cutlery of superior finish will be found in the same room, every article of which is stamped with the name of the firm as a guarantee of superior quality. Another room is set apart for baths, for fenders and fire-irons, for trays, dish-covers, and tea-urns, for iron bedsteads, and for garden vases, seats, and implements, &c. In this department the firm seem most anxious to stand pre-eminent, and they certainly not only make a large display of beautiful and useful goods, but show the utmost courtesy and attention to their customers. It is worthy of notice that the excellence of the goods supplied by Maguire and Son is such that they have received orders to furnish different first-class houses in London, Naples, Florence, India, and China, and other distant places. In the builders' department the chief subdivisions are: marble mantel-pieces, which are shown in every variety of colour and design. The large wareroom where these are exhibited is in itself worthy of a visit. We were shewn, in our hurried visit, some beautiful Gothic designs with grates *en suite*, some of which had been made specially from the designs of Dublin architects. We observed, among other foreign marbles, Brocatelle, Janne de Castille, Malplaquet, Rose Napoleon, and pure statuary; we, however, saw plainly that Maguire and Son aim specially at the encouragement of native produce, as at least two-thirds of the stock is in Irish marble, manufactured by Irish workmen. Polished marble columns in every colour are supplied to any given size. Kitchen-ranges and grates form a still more important feature in this department. The kitchen-range show-room is immediately beneath the marble-room; and here we were shewn every description of range, manufactured by Maguire and Son, from those suitable for clubs, hotels, &c., to the smallest cottage stove; we were also shewn ranges made by S. Flavel and Co., Radcliffe and Co., and other celebrated makers. The firm seem to think very highly of a new range designed and manufactured by them exclusively. It certainly shews some important advantages: it heats a large oven, boiler, and hot-plate perfectly from one fire; roasting is done before the fire, and, above all, no brickwork is required, as the flues are constructed in iron, so that the range is perfectly self-setting and self-acting. Cut and wrought nails are here sold by the ton weight; and rain-water goods, sash weights, and other metals used by builders, are kept in stock of every size and description. Sheet lead and pipe lead form also an important item of trade, any quantity of which can be sent out cut to any size at very short notice. A wareroom containing the stock of locks, hinges, fasteners, screws, and all the minor details of building requirements will be found upstairs. We were shewn some beautiful specimens of tiles for floors, hearths, walls, &c., for the sale of which the firm hold the sole Irish agency of Messrs. Malkin and Co. A wareroom in the basement is at present being fitted up with samples of the horse-stalls, loose boxes, cow-house fittings, and improved stable fittings, for which the house is now celebrated.

We were taken to the new iron works and factory through a covered-in bridge over Dawson-lane, which connects the factory with the warerooms. Here we were pleased to observe all the work in progress, some of which we had seen in its finished state in the warerooms. We were first taken to the top of the new building, and shewn two large workshops, in which are constructed all conservatories, vineries, and other horticultural buildings, of every size and design, some of which were near completion, while one large vinery, intended for Enniskillen, lay on one side packed and waiting for the carrier. We understand that in these buildings Maguire and Son are able to compete successfully with the English and Scotch houses.

In the next loft under these are placed the plumbers, gasfitters, brassfinishers, and tin and coppersmiths; under this again is the engineering shop and store-room, where every description of pumps, boilers, &c., for hot water heating apparatus and steam work, taps, valves, basins, and bathwork are kept in stock, in a finished state, ready to be worked up in the various out jobs. In the rere of this is the new smithy, where iron gates, railings, and fence work are being manufactured, and from which the firm have just sent out the railings which now surround St. Bartholomew's Church, Clyde-road, and St. Andrew's Church, in St. Andrew-street.

The firm have a very large business in hot-water heating apparatus, which they fix in all parts of Ireland; and as it is undoubtedly the best system of heating, they have given it great attention, and have introduced many important improvements. They strongly recommend their own tubular boilers for safety and economy, and the valves they introduced are perfect. All the kitchen ranges manufactured by the firm are fitted and put together in the same workshop.

Hydraulic rams for raising water; turbines, which are supplied by Maguire and Son for turning lathes, blowing organ bellows, and numerous other purposes, can be now advantageously worked in Dublin by the Vartry high-pressure water supply. Geoghegan's patent safety apparatus is shown in the factory at full work, and it effectually prevents water pipes bursting in frost or under high pressure. Gasworks for private houses are put together and sent out from this factory, and fixed in any part of the United Kingdom. Laundry and drying-room apparatus has also received considerable attention. The celebrated water filters, which are so strongly recommended by our city analyst, are all made in this establishment, so that the public may be certain of getting the genuine filter as improved by Maguire and Son. They are now sent regularly to all parts of England, and many go from time to time to the Continent, and to India and China. We sincerely hope that the same success will continue to attend the management of this establishment, which affords permanent employment to a large number of hands.

The various alterations in this now very extensive concern were, we understand, carried out under the superintendence of Mr. Joseph Maguire, of 201, Great Brunswick-street.

THE BELFAST WATER WORKS.

In its report of the proceedings of the Belfast Water Commissioners at their fortnightly meeting on the 6th inst., the local *News-letter* has the following :—

REPORT OF FINANCE COMMITTEE.

"Lodgements in bank since last report are—On debenture, £600 ; taxes collected, £349 5s. 1d ; water valve, &c., sold, £2 14s. 9d ; total £751 19s. 8d. Balance in bank, £7,447 4s. 9d. The committee recommend the Board to issue cheques for the following amongst other payments :—J. D. Cooper, £700 ; Public Works Loan Commissioners—year's interest on £19,333 6s. 8d. ending the 11th instant—£966 13s. 4d ; do. on account of principal debenture, £666 13s. 4d ; interest due debenture-holders, to 5th inst., £275 11s. 8d., less income-tax, £5 14s. 11d."

Mr. Shaw moved, and Mr. Priestly seconded, the adoption of the report.

Mr. Rea objected to the Board paying the item of £700 to Mr. J. D. Cooper, as it might turn out, when the works were finished, that Mr. Cooper would owe the Board far more than this sum in fines and penalties. He would like to hear Mr. Carlisle's opinion on the matter.

Mr. Carlisle said he believed they would have to pay the amount. There would be a vast amount of extras on the work—indeed, on the £11,000 dam there would be extras to the amount of £5,000, and after all it was a question whether the dam would be of any use at all or not.

Mr. Rea—That's very pleasant.

Mr. Carlisle—It's a great pity that our hands are tied up that we cannot help paying for those extras. I believe those extras are absolutely useless, and that £15,000 of the ratepayers' money is just thrown away.

Mr. Shaw—There is no use reflecting on the contractor, for he must act according to the engineers' instructions.

Mr. Carlisle—I'm not reflecting on the contractor at all, but I blame the old Commissioners for appointing the engineers they did. I may say that if this dam was full to the brim, at the end of eight days there would not be a drop in it.

Mr. Rea—Upon my word this is very agreeable. This is a dam such as we read of in the "Arabian Nights." And a neat little paragraph in the papers containing Mr. Carlisle's statement would be more interesting than anything that has appeared in them since the Coercion Bill passed through the instrumentality of the Liberals. Upon my word a happy thought strikes me. Might we not make a neat little profit by this magical dam by just advertising its virtues and inviting tourists from England and Scotland over to see it? I am sure if they were made acquainted with its wonders, they would flock to it in crowds, and would have no objection to wait for the whole eight days to see the charm working. We have a precedent for this. There was a girl in Wales, and it was intimated by her parents that she could do without food, and all England was in a ferment, and doctors went, and just as the girl had shown she could do without meat she dropped off. Now, what's the Welsh fasting girl to this wondrous magical dam? It's full of water one day, and in a few days not a drop in it, and it only cost £15,000. You may pay this sum if you like, but I must ask the secretary to put down my name as protesting, just to prevent mistakes in future.

Mr. Moffett was of opinion that the money ought to be paid at once. If not paid, the works might be stopped.

Mr. Rea—I beg to propose "that this amount of £700 to Mr. Cooper be omitted for the present, and that the Law Committee be directed to report to the next meeting as to how matters stand between Mr. Cooper and the Board, and whether or not the Board can safely pay this £700."

Mr. Carlisle seconded the amendment.

Mr. Shaw said he would not oppose the amendment. However, he thought they were bound to pay the money on the engineers' certificate.

The amendment was carried, Mr. Moffett dissenting.

The report, omitting the item of £700, was then adopted.

Mr. Moffett—I think the man should be paid his money, as it is justly earned.

Mr. Rea—If all the world would turn Quakers there would be no war; but I think it is a curious doctrine for an orthodox Presbyterian of sixteen stone weight to lay down, that if a fellow asks you for money you are to give it.

CORRESPONDENCE.

[*It is to be distinctly understood that although we give place to letters of correspondents, we do not subscribe* editorially *to the opinions or statements set forth in same.*]

TO THE EDITOR OF THE IRISH BUILDER.

Sir,—I have read the advertisement in the *Builder* and *Building News* alluded to by your correspondent, "An unfortunate Irishman who wants to learn," in your last number, and the same idea struck me—are there no assistants capable of conducting the business of an architect's office to be found in Dublin? Well, I think that whatever the architects' assistants know of their art, their masters and employers, as a general rule, know less; for, after some years' experience of Dublin architects, I have come to the conclusion that there is scarcely such a thing as an art architect in Dublin. We are, of course, all aware that a great display of brass plates bearing the name are to be seen on many doors in town, but I, nevertheless, adhere to my statement that there are not more than half a dozen architects in the city, the remainder are nothing better than surveyors,—gentlemen who, the moment a client desires a villa, rush to Ker's "Gentleman's House," or Wicke's "Villa Architecture"; and if a church is to be manufactured, deliberately turn over the leaves of Nesfield's or Shaw's Sketches, and transfer French or English churches by the score from the lithographed page to sundry sheets of double elephant, which, after undergoing various scrapings, erasures, and alterations, are duly signed, sealed, and delivered ; the building is *executed*, and the papers teem with puffs about the "new church designed by, and carried out under the able superintendence of the talented architects, Cogg and Prigge, Esquires, of this city."

Now, is there no remedy for this state of things? Are there no men in Dublin who have a real knowledge of art? Well, there are a — few, and for the present we may be thankful that we even have some, and must only endeavour to increase their number, so that we may in time equal our English brethren, who are, I must acknowledge, far ahead of us in the fine art portion of our business.

I think that there could not be a better way of bringing out the ability of a young architect. and of teaching him to design and draw with expedition, than the system of sketching clubs or classes. A couple of years ago, when the Institute class was in existence, it was painful to observe the paucity of members who attended; two, and sometimes only one member thinking it worth his while to leave his home or to forego the attraction of the concert or the theatre. Now this shews a very bad state of things, and I think that instead of the Institute abandoning the class, it ought to have held out further inducements for the attendance of students, in the way of prizes of books or medals, to be given perhaps for the best sketch in the month, or three months, to be decided by the students' own votes, or by the council of the Institute. Unless there is some such inducement, I fear that a sketching class will not succeed in Dublin, where there is a difficulty in getting members of the Institute, who ought to shew the example, to attend the ordinary meetings held only once a month ; whilst in English towns the classes and meetings are generally crowded, and London can support several architectural societies ; and I know from experience that the only occasions that the members of the Dublin Institute attend is when the notice papers announce a testimonal, dinner, conversazione, or other agreeable entertainment.

In conclusion, I am of opinion, with your correspondent, that the Institute class could be revived with profit, and the sooner it is done the better for art in Dublin.

Another Unfortunate Architect
who wants to learn.

REMUNERATION TO CIVIL ENGINEERS AND ARCHITECTS.

TO THE EDITOR OF THE IRISH BUILDER.

Sir,—This subject, to which I ask your attention, and the attention of your readers and the public generally, has been recently placed directly before me. It may be of professional and public utility that the facts should be ventilated in your columns. I do not know, of my own knowledge, that the facts are true, but, so far as finding them in a letter from the solicitor to clients of mine can fix them, the fact is so. Having the pleasure of the public confidence in the practice of the profession of a civil engineer, and being anxious, on my own account, and also on that of the profession generally, to approach and discharge my professional duties with credit to myself and advantage to my clients, I feel it is only fair and reasonable that the remuneration for duties admittedly so discharged should be reasonably to my own advantage. For this reason I adhere to the general practice of those gentlemen who, like myself, have a pride in the profession, and charge my fees and remuneration in accordance with the general practice. It appears certain clients of mine alluded to have fixed upon the remuneration to be given for the designing and supervising the erection of buildings for Dunville's new distillery at Belfast. The service is that generally performed by the architectural profession, but I believe I am correct in saying that the party performing the service is a civil engineer, who "finds it very difficult to get into respectable practice." The price charged for designing and supervising is reported to be three-and-a-half per cent. This is not the only particular that has come under my notice here calculated to bring into disrepute a useful and respectable profession. Here there is a trespass on the legitimate grounds of architects, and the practice of incompetents resorted to, which indicates a sad want of becoming professional pride—that indispensable commodity to the certain interests of clients. One of the late presidents of the Institution of Civil Engineers made some severe remarks to me as to the want of professional pride in some members of the profession at Belfast, in which I was sorry to have to concur; and this is another but different instance, and an expansion of the list. There can be no doubt but a ventilation in your columns of this and like instances will result beneficially to the professions alluded to; for in this manner the members of the respective professions will come to know the parties whose professional conduct may be liable to bring the practice of the particular profession into disrepute. Personally, I disregard the facts to which I draw your attention, and I draw attention to them solely on professional grounds, so that the facts which tend to bring the profession into disrepute may be known, and their originator perceive that the disrepute may "come home to roost," and press heaviest on the parties resorting to such practices.

I remain, sir, your's truly,
Belfast, April 11, 1870. C.E.

NOTES OF WORKS.

The foundation-stone of a new Roman Catholic Church was laid at Killowen, within about two and a-half miles of Rostrevor, Co. Down, on a site granted by S. Walmsley, Esq. The church promises to be a handsome one, and will be built of blue and white granite. The use of quarries for the purpose of the building has been granted by the Hon. Mr. Canning, and Mr. M'Clintock, agent for the Marquis of Downshire.

The foundation-stone of a new school building, in connection with the Church of the Sacred Heart, Donnybrook, has been laid. The site, which has been given by the Very Rev. Dean O'Connell, immediately adjoins the church. The plans have been furnished by Mr. G. C. Ashlin. Mr. Courtenay, of Dundrum, is the builder.

From Derry we learn that a handsome, commodious and substantial structure has been completed for Messrs. J. Gallagher and Co., clothiers and outfitters, long known as the proprietors of "The Golding Fleece." The new building is erected upon the site of that formerly occupied by the firm. It presents frontages to the Diamond and to Shipquay-street, the appearances of both these thoroughfares being much enhanced by the elegance of its design. The principal material is Belfast red brick, with base course, pilasters, carved trusses, cornices, and other dressings, in Glasgow stone. The windows are semicircular, and filled with British plate glass. The interior is admirably adapted for business purposes and those of a dwelling-house, everything in the way of convenience and comfort having been attended to. Perhaps not the least important feature is the substantiality of the work; there is a total absence of imitation—the genuine material alone being used throughout. Messrs. Godwin, Brothers were the architects. The works have been creditably carried out by Messrs. G. and R. Ferguson, builders, Pump-street. Mr. Phillip Doherty, Chamberlain-place, executed the stone carving.

ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND.

THE next Ordinary General Meeting will be on Thursday Evening, 21st of April. Paper by Mr. William Fogerty, F.R.I.B.A., Fellow, "Notes of a recent Tour in Italy." To be submitted for ballot, as Non-Professional Associate:—John Ribton Garstin, LL.B., M.R.I.A., Hill Side, Killiney.

THE ROYAL DUBLIN SOCIETY.

THE sixth evening scientific meeting for the session of 1869-70 will be held on Monday evening next. Communications:—Dr. J. M. Barry—"Observations on the Habits and Manners of the Australian Aborigines." Mr. Frank E. Day Lewis—"On the Cultivation and Distillation of Flowers in the south of France."

BOOKS RECEIVED.

The Science of Building. By E. Wyndam Tarn, M.A. London, Lockwood & Co.

THIS book contains much valuable information, particularly upon the structural qualities of building stone, the construction of arches, and the proper composition of mortar and cements, the strain on girders, and deflexion thereof under given weights, the framing of timber roofs, and on iron wrought and cast as constructive material—this latter portion is particularly interesting now that iron is becoming so extensively introduced in all building operations of importance.

MISCELLANEOUS.

NEWRY AND GREENORE RAILWAY.—The Newry & Greenore Railway Company's Bill, which has already passed the House of Lords, is to be read a second time on Monday, the 25th instant.

PRE-HISTORIC AYRSHIRE.—Such was the attractive title of a most original and instructive lecture given the other evening at Ardrossan by the President of the Geological Society of Scotland. One or two of Mr. Geikie's points were quite fresh. He said that only in the previous week he had been visiting one of the most noted resurrectionists of the present day, a man who had opened more than three hundred graves of ancient Celtic worthies in Yorkshire, and elsewhere in the north, and he had told the speaker that he had not discovered a single specimen of the rude flint implements, such as had been found in the south-east of England. All the weapons found in Yorkshire bore evidence of a much later and higher type of civilization. One was tempted to ask the reason of this. If they were to draw a line from the mouth of the Thames to the mouth of the Severn, they would form a boundary, to the north of which these rude instruments he had referred to were exceedingly rare, and it was evident that man had crept northward only after the climate had become warmer. The first of them who got as far north as Ayrshire were probably lake dwellers. The filling up with slag of one of the large lochs at Kilbirnie had gradually raised one of these old lake habitations of our early ancestors. It consisted of piles driven into the ground, and wattled together with large branches of the pine tree, forming a little island on which the inhabitants lived. On examining it he had found a number of bones—one of a hog, and one of a sheep, and some fragments of pottery. Referring to ancient camps, Mr. Geikie said there were two or three between Ardrossan and Largs. These were usually of a circular or oval form, with two or three ramparts composed of stones and earth. They were very small, so small that they could have held but a handful of men, and seemed to be designed for the defence of some homestead of people. There was, however, between the village of Dailly and the sea one of large dimensions. As to vitrified forts, there was one specimen in Ayrshire—the most southern which had yet been discovered. It was situated in the parish of Dundonald, and was large enough to hold a small body of men. In the south east of the shire, there is a mysterious wall—longer than the famous wall of Antoninus—which the inhabitants of that district called the Devil's Dyke, and which had evidently been dotted over with small forts; but who had built that wall no one can tell. Mr. Geikie thinks the earliest Ayrshire people were Celts. True, there are some evidences of a still earlier race of inhabitants, but these are faint. The Celts were the same race as the Irish and Welsh, and the names of many places in this district testified to their presence at an early period. The Doon and the Girvan were Celtic names. Ochiltree meant high town; Dailly was a vale in Celtic; Balskerrie, the name of a farm in the Girvan district, was purely Celtic, and means priest's town. Were they to go over the southern part of Ayrshire, they would be astonished at the abundance of Celtic names over all that country—even the names of people were very strongly Celtic. They also found the Norse element in the customs and superstitions of the people.—*Glasgow Daily Express.*

CURIOUS DISCOVERY.—A very curious discovery was made on Saturday last, 26th ult., on the farm of Mr. Patrick M'Laughlin, of Kilourt, about two miles from Malin Head. While Mr. M'Laughlin and one of his men were trying to raise a large stone, finding it too weighty, they went for a few more men, leaving the crowbar inserted between two stones, but, on returning, they found the bar had fallen down through the opening. On removing the stone they found a large opening underneath. Mr. M'Laughlin then descended with a candle to explore the cave, which, from marks at the entrance, seemed to have been inhabited at some period. To the south of the entrance there seemed to have been a refuse room, which is about ten feet in length, and filled with limpet shells, beef bones, and ashes. Going north-west from the entrance, you pass through an apartment twelve feet long, by nine feet wide, and five high, at the end of which is a small round hole cut in the rock, just large enough to admit of one person creeping through, which brings you into a sort of passage fifty feet long, by three feet wide. You then go into the fourth apartment, which runs with a kind of curve, and is twenty feet by six feet. Passing through this, you come into the fifth division, which seems to have been a kind of water-room, being deeper than the others, and a very clear spring in one end of it. The room is twelve feet long, by nine feet wide, and six feet high. Turning to the left, you enter a kind of cellar by three feet of a drop, the entrance of which is very small, and is forty-five feet long, and five feet wide, at the end of which is another entrance, built up with shore stone; and it has not been opened yet, and is supposed to be the proper entrance from the outside. The whole place is cut out of the solid rock, is about two feet from the surface to the top of the cave, and is the largest of the sort ever found in this county.

A ROMAN AMPHITHEATRE AT PARIS.—A most unexpected discovery, that of a Roman amphitheatre, has just been made at Paris; though why it should be unexpected, and, above all, how it comes to be the first of its kind, we are at a loss to understand. Modern Paris covers the ground of old Lutetia, the capital of Transalpine Gaul, and our only surprise is that so many centuries should have passed before this relic of the olden time was brought to light again. However this may be, the stranger who may have happened to visit the Phantheon will find himself at about five minutes' walk from this remarkable spot, by following the Rue Clovis and turning to the left down the Rue Thouin. This Gallo-Roman amphitheatre, in which public games were held as late as the period of the Merovingian kings, occupies the eastern side of the Mons Lucotitius, now the Montagne Ste. Geneviève. M. Henri Martin, in the *Siècle*, states that its existence was known under Phillip Augustus—a fact proved by a Latin poem written under that reign by a monk of the Abbey of St. Victor, who calls it the "Great Circus." In the deeds of that period it is mentioned as the "Clos des Arènes," but it had since disappeared from the map, having become gradually hidden under a thick deposit of rubbish from seven to eight metres deep. About one-half of its vast oval is now uncovered in the Rue Monge, on the site where not many years ago stood a convent of English nuns. The rows of stone seats on this side are nearly all destroyed, but the main walls built of stone and Roman cement, without any admixture of brick, are still in good preservation. Two of the recesses in which the while beasts used to be kept are still visible. The style of building denotes a later period than that of the Palais des Thermes. Several medals and the fragments of a rich turquoise and lapis-lazuli necklace with gold clasps have already been found, and more such relics are confidently look forward to. Whether this amphitheatre, which occupies ground partly belong to the Omnibus Company and partly to a convent, is to be preserved, is doubtful. The *Siècle* is of opinion that, at any cost, this fragment of antiquity should be preserved; and it points out that the arena, when entirely cleared, might be advantageously made use of for public buildings.

MODERN CUSTOMS.—Presentations and Testimonials are largely on the increase; this modern custom appears to extend to almost every household, for no auspicious event is allowed to pass without its being marked by some pleasing souvenir; Birthdays, Christenings, Marriages, the seasons of the year, such as Christmas, New Year, &c., invariably receive special commemoration. The attention of one of the great London Manufacturers, Mr. J. W. BENSON, of 25, Old Bond Street, and of the City Steam Factory, Ludgate Hill, has been directed to this subject. With the view of giving more artistic effect to this custom of society, he has published a most interesting Illustrated Historical Pamphlet upon Watches and Clocks, also one upon artistic Gold Jewellery, Silver and Electro plate; all are profusely illustrated with choice designs, and are sent post free for 2d. each, thus bringing within the reach of those who live even thousands of miles away from London, one of the largest and most artistic collections which can be seen in any part of the world; and, if necessary, designs are prepared to illustrate any special case.

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The Irish Builder.

Vol. XII.—No. 249.

The Theatre for Grafton-street.

SOME weeks ago we alluded to the fact, that an application had been made by a firm of music-sellers to the Lord Lieutenant for a "patent" to enable them to erect a theatre in Grafton-street. The hearing (adjourned from February 26th) was resumed on the 21st ult., in the Council Chamber, Dublin Castle, before the Attorney-General and the Solicitor-General, and occupied two days. The nature of the report which these learned gentlemen may make to his Excellency we, of course, cannot prognosticate with certainty; but we are very much inclined to surmise that it will not be in favour of the applicants; that it will contain clauses suggestive of such extensive and necessary alterations in both the "Royal" and the "Queen's" as may tend to satisfy the most critical of "playgoers."

During the inquiry (says a contemporary) "one class of witnesses held that a new theatre was much required in Dublin, and that it would not be injurious to the existing establishments. Others equally competent to form an opinion, considered that this city cannot support three theatres, and that the erection of a new one would lead to the closing of the Theatre Royal. Mr. Levey, whose long experience entitles his opinion to considerable weight, says that the taste for the drama in Dublin has greatly declined, and facts which are patent to us all seem to corroborate this view of the matter. On the other hand, it is argued that there are reasonable grounds for believing that a small, elegantly appointed, and comfortable theatre, conducted with spirit and ability, would prove pecuniarily successful: while there would still remain an ample field open to the lessee of the Theatre Royal upon which the new establishment could not encroach."

We make room for some of the more important parts of the evidence adduced during the hearing last week:—

Dr. Seeds appeared for Messrs. Gunn, the applicants. Messrs. Exham, Q C., and Murphy, Q.C., appeared for Mr. Harris, lessee of the Theatre Royal; and Mr. Butt, Q C., for Mr. Joseph, patentee of the Queen's Theatre. The Hon. J. P. Vereker appeared for the Exhibition Palace Company.

Mr. Phipps, F.R.I.B.A., examined by Dr. Seeds—Had built about 10 theatres in London and England. Prepared the plans produced for the erection of proposed theatre. In his opinion the site was an exceedingly good one, and ample provision was made for ingress and egress. There were 14 dressing-rooms shown on the plans, and he proposed to light the interior with a sun-burner, and to provide ample ventilation around the sun-burner and at the sides. There would be a stone staircase to the boxes, 6 ft. wide, and there would be separate retiring-rooms for both ladies and gentlemen on every tier. To guard against fire the mains would be carried into the house, and there would be three hydrants with hose attached always ready. The cost of the entire building he estimated at £9,352.

Mr. John Gunn, examined by Dr. Seeds.—Is one of the firm of Messrs. Gunn, of Grafton-street, who were applying for a patent for a new theatre; since last meeting he had consulted with Mr. Phipps, who had prepared the new plans (produced); they had taken more ground in order to afford larger space for the theatre; he went to London and had conversations with a great number of managers of theatres there in reference to the subject, including Mr. Boucicault, Mr. Sothern, and Mr. Chatterton; the last-named gentleman told him that in his opinion new theatres had not a prejudical effect on the old theatres, and Mr. Hollingshed, another manager of experience, wrote to say that the increase of theatres in London had had a beneficial effect. They intended to follow the arrangements of the Gaiety, and to book free. He thought there was no town of the size of Dublin limited to two theatres. He found from a calculation that, in towns of any considerable size, the ratio was one theatre to every 65,000 inhabitants.

Mr. Exham asked witness how much money is forthcoming to build the new theatre?

The witness, in reply, said that he had a considerable portion of the funds necessary for building the theatre himself. His arrangements, however, had not been technically and legally concluded, on account of the uncertainty attending the present application. He could raise £10,000; and if he had known that he would get a patent he would have lodged £10,000 that day in bank. Had already spent between £400 and £500 for the purposes of the proposed theatre.

Mr. W. F. Caldbeck, C.E., was briefly examined in reference to the plans which had been prepared conjointly by himself and Mr. Phipps.

Mr. Meade said he was prepared to erect the proposed theatre on the order of the Messrs. Gunn for the amount of the estimate put in.

Mr. Michael Gunn was also briefly examined in reference to the *bonâ fides* of the undertaking.

This closed the case for the application.

Mr. Butt, on behalf of Mr. Joseph, patentee of the Queen's Theatre, said if the Attorney-General and Solicitor-General were of opinion that a third theatre was necessary in Dublin, he would not say that the Lord Lieutenant ought not to be advised to grant a patent for it, more or less qualified; but it would be a great calamity if the result of starting a third theatre was to create ruinous competition between them. As far as Mr. Joseph was concerned, the case was a little hard. He applied for a patent when that granted originally to Mr. Jones in 1813, and subsequently renewed, was about expiring, but his application was refused, and he was actually obliged to pay a sum of money to Mr. Jones's representative in purchase of his rights under the patent, which was then renewed to Mr. Joseph himself. He (Mr. Butt) held in his hand a memorial numerously signed by most respectable citizens against the proposed theatre, and expressing their opinion that there was no necessity whatever in Dublin for more theatres than those already in existence.

Mr. Exham, on behalf of Mr. Harris, lessee of the Theatre Royal, stated that that theatre was erected in 1820, at a cost of between £80,000 and £90,000. The debentures on it amounted to about £10,000. All Mr. Harris's predecessors had lost largely by it. Another Mr. Harris was the first lessee, then a Mr. Abbott, then Mr. Bunn, and then Mr. Calcraft, who held it till 1849, when it became vacant, and remained so for two or three years; and a large sum was due on it for rent when the present Mr. Harris came forward and took it up in 1851. The outgoings of the theatre were enormous. The rent was £1,100 a-year; besides which there were persons in London with annuities charged on it to the amount of £1,000 a-year; and, independently of these, Mr. Harris had actually expended on the theatre in decorations, in paying the arrears of head-rent, &c., no less a sum than £10,000. In 1851 Mr. Harris tried to establish the legitimate drama, and brought over actors and actresses of the first character from England, and did everything a manager could do. Nothing in that theatre would pay except the Italian operas and the pantomime.

The Solicitor-General observed that it would materially increase the attractions of the Theatre Royal if backs and arms were added to the seats in the boxes.

Mr. Joseph detailed the circumstances under which he became the patentee of the Queen's Theatre, at an expense of £1,000 or £1,200. Since he had got the patent he had expended about £6,000 on the theatre; within the last fortnight he had expended £120 on it. Mr. George Owen was at present the lessee for a period of three years. The Queen's Theatre had trained and brought out several great actors, including Mr. Robson, Mr. G. V. Brooke, and Mr. Toole. He was perfectly certain that there was not in Dublin a sufficient number of playgoing people to support three theatres, and that the establishment of a third theatre would lead to ruinous competition.

Mr. George Owen, lessee of the Queen's Theatre, said the accommodation afforded by the Queen's Theatre was very good in its way. It was managed with as much care as it was possible to exercise to make it a place of general resort for the public. There was no doubt that it differed from the Theatre Royal in this respect, that the Theatre Royal was a family theatre, whereas the Queen's was rather a burlesque theatre.

Mr. Frederick George Bashford deposed that he goes to the theatre about four times a week, and has done so for the last quarter of a century! There never was a finer stock company than that which Mr. Harris maintained for a few years after he came into possession of the Theatre Royal. Did not believe it possible for Dublin to sustain three theatres.

Mr. John Harris, lessee of the Theatre Royal, was next examined. He stated that the annuities payable out of the revenues of the theatre amount to £8,000 yearly. There were 100 debenture-holders, of whom 60 availed themselves of their privileges when he took the theatre; but, during his management, having been a little more successful than his predecessors, he found almost the whole hundred made their appearance. He also begged to state that last year Mr. Kean had told him that his stock company was the best that he (Mr. Kean) had met anywhere for the production of his pieces, and the members of that company were all in his employment still, with the exception of one or two. The stock scenery of the Theatre Royal was superior to that of any theatre in London, and in no theatre in her Majesty's dominions could the legitimate drama be more efficiently performed. At first he kept the theatre open till August, but he found that between May and August he was losing every week—some weeks as much as £100, and he was obliged then to change his system. He spared no exertion in engaging all the best actors. At present he had the Haymarket company engaged, the Italian Opera company engaged, and Toole engaged. The theatre, he desired to state, in correction of a mistake which appeared a short time ago in a morning newspaper, was capable of containing 6,880 persons; but it was only filled to that extent once, when the Earl of Eglinton was present, the piece produced being "A Midsummer Night's Dream."

The Solicitor-General said he had never seen a play in any theatre better put upon the stage than "A Midsummer Night's Dream" had been on that occasion.

Mr. Harris said if the new theatre succeeded, the Theatre Royal must fail. The Theatre Royal could never exist unless it had an exclusive right. He had worked like a slave for 21 years, and made nothing by it. There was not a sufficient number of playgoing people in Dublin to support three theatres. He had paid two cheques for £400 each to Patti for twelve nights, besides having to pay all the other artists, when the receipts of the theatre were £180 a night. In 1858 he spent £3,800 in redecorating the theatre, £150 the year following, and in 1865 £1,000. He had invested altogether in the theatre about £10,000. The expenses of the theatre during the operas had sometimes been £1,200 to £1,500 a week. If he was to encounter opposition, he did not think he would continue manager; but if he renewed his lease, which would shortly expire, he would make it a condition with the proprietors of the theatre that it should undergo a regular overhauling, and he would pay attention to the state of the boxes. On average opera nights there was room in the dress circle for 100 persons more than it contained. The house had never been full for five years. During the last pantomime, on which he had expended £2,000 before he received a penny, there was room in every part of the house every night. Yet it was an admirably-constructed theatre. The opera people had repeatedly told him it was the best theatre to go to for sound.

The Solicitor-General said he had heard people say it was one of the best theatres in Europe.

Mr. J. S. Butler, city architect, stated his opinion that there was not room for a third theatre in Dublin.

The Solicitor-General, referring to the memorial in support of the present application, said he had never seen a document so largely and respectably signed; but the only subscriber of it who had been produced was Sir Wm. Carroll, and Sir Wm. Carroll in his testimony had not pledged himself to the statement of the memorial, but, on the contrary, guarded himself against expressing a positive opinion. This only showed how easily people were induced to sign memorials, and how desirable it was that some of them should be produced for examination as to their opinions on the matter.

A score of witnesses (including the Lord Mayor) gave evidence in favour of the applicants; some of them, however, would not advocate a third theatre to the injury of the "Royal."

The evidence having closed, the counsel for the several parties interested addressed the court.

The Attorney-General said that they would intimate at the earliest possible opportunity what report they would make to the Lord Lieutenant.

NOTES OF AN ARCHITECTURAL TOUR IN ITALY, IN THE AUTUMN OF 1869.[*]

In submitting the following sketch of an architectural tour recently undertaken, the writer does not pretend to have broken any new ground, or accomplished anything that has not, in all likelihood, been done before him by abler architects and travellers. He hopes, however, that there may be still sufficient of individuality in his impressions to furnish matter of interest to the members of this Institute, and that his experiences may be of some little value to those younger members of the profession who may have similar tours in contemplation.

Unless, indeed, an architect travels in the commencement of his career, it is generally difficult for him to do so with advantage afterwards. The short holidays that an architect already in practice can afford to spend abroad are rarely sufficient for more than a glimpse at the architectural and other art treasures with which the Continent of Europe is so well stored. Since first I applied myself to the profession of architecture, it had been my anxious wish and hope to be permitted to visit the classic land of Italy with some degree of completeness; but hitherto, though able to spend occasionally a few weeks or a month in different parts of the Continent, I never could command sufficient leisure to attempt Italy. Patience, however, in my case, was at length rewarded, and at the end of last summer I found myself with several months of leisure before me, which I at once resolved to devote to my darling project. I was especially fortunate in meeting with a most agreeable and congenial companion, a promising member of the same profession, Mr. Thomas Longfield, of this city, whose sketching capabilities and industry have enabled me to treasure up a far greater store of sketches and drawings than I could otherwise hope to have collected, as he and I managed, by the division of labour, to sketch a far larger number of subjects than either could have done separately, a few specimens of our doings in that way being submitted in illustration of this paper.

The number of admirable illustrated works on Italy, and especially the application of photography to reproduce her art treasures, leave very few subjects of celebrity without ample delineation. However, there is still a wondrous mine of inexhaustible wealth left, and there is no pleasanter or more profitable exercise than searching for treasures of art, and transferring them to one's sketch-book; and our only regret in most cases was that, however carefully we managed to divide our time, we felt that we were often obliged to hurry on, content with a mere passing glimpse of what we would gladly have studied at leisure, and brought away a lasting memento of. The photographs exhibited this evening was collected in the various cities and towns during our tour; and some of them, especially those of Venice, are marvels of cheapness, while illustrating the subjects they represent with matchless fidelity.

On the 15th September we left London for Paris by the Newhaven and Dieppe route,—one which, however to be recommended for the shortness of the distance and the picturesqueness of the various cities passed, cannot be recommended for certainty or expedition, as we lay weather-bound for about forty-eight hours at Newhaven, and could only gratify our architectural tastes by inspecting "the decent church that topped the neighbouring hill," dating from the Saxon period, and sometime restored through the means of some society in London, which thereupon affixed a large cast-iron tablet recording the fact. Tired of the church, we wandered among the tombs to find (as who does not) even amid such grave objects, some quaintness and even gaiety in the inscriptions. Here are two specimens :—

"Weep not for me, dear parents, pray,
For in my yout was took away;
As I am now, so ye must be,
Therefore prepare to follow me."

And—

"To the memory of Thomas Tipper, who departed this life May ye 14th, 1785, aged 54 years."

"Reader, with kind regards this grave survey,
Nor heedless pass where Tipper's ashes lay;
Honest he was, ingenuous, blunt and kind,
And dared do, what few dare do, speak his mind.
Philosophy and history well he knew,
Was versed in physic and in surgery too:
The best old stingo he both brewed and sold,
Nor did one knavish act to get his gold
He played through life a varied comick part,
And knew immortal Hudibras by heart;
Real in real truth, such was the man,
Be better, wiser, laugh more if you can."

The fortifications in progress at the mouth of the harbour next engrossed our attention, and are chiefly interesting as shewing what a vast sum may be expended without producing any appreciable effect, architectural or otherwise, save an occasional disfigurement of the landscape, under the direction of a department to which, according to the latest theory announced at South Kensington, the architectural profession is in future to be subordinated in all great public works. However, we were landed at length in the town of Dieppe, gay with bathers from Paris; and having just glanced at some of the old flamboyant churches it contains, and attempted a hasty sketch of the tracery of the west front of the Cathedral of St. Jacques, we passed on to Rouen—a city of never-failing interest, with its glorious church of St. Ouen, and other wonders of the Middle Age. Thence to Paris, whose imperial splendours we did not stop this time to admire, but hurried on next day in one long straight run to Bâle—a journey which, like several others in this tour, gave us much occasion to reflect how much architectural students owe to the railway system, being accomplished in about twelve hours, instead of nearly as many days as in the olden time.

Pleasantly situated on the banks of the rushing Rhine, Bâle seems rather German than Swiss, the grand and peculiar scenery associated in all our minds with Switzerland not being yet reached. The city is remarkably clean, prosperous, and orderly in appearance, and contains many interesting buildings, Mediæval and modern. The cathedral or Münster, standing on an elevated plateau commanding a noble panorama of the Rhine, has much in common with the large churches in the other Rhenish cities, such as Mayence and Coblentz, the semicircular arch prevailing to a much greater extent and for a much later period than in other parts of Europe. This church, like nearly all the others in the same city, has been adapted to the worship of the Swiss Reformed Communion, and in its interior reminds one very much of the observation of one of John Knox's coadjutors relative to the appearance of the cathedral of Glasgow after undergoing a similar transformation. "The auld kirk," said he, "looked as crouse as a cat when the fleas are caimed out of her." The interior masonry has been cut out and replaced to a great extent with new, and only a portion of the carving reproduced, the capitals being generally left in their block form; but casts and specimens of the original carving are carefully laid up in the adjoining chapter-house. The seating is all new, of oak, and there is a fine new organ; but at the east end cruel hash has been made of the ancient stalls of the choir, three or four of which are placed transversely facing the nave—for the elders, I presume,—and the rest disposed about in various directions. The choir stood very high over the nave originally, with a lofty flight of steps, the centre of which is cut away for the three or four stalls above mentioned. Nevertheless, when well filled, as we saw it, this venerable church seems quite as well adapted, even to the very simple form of Protestant worship now used in it, as it was to that which preceded it, and seemed much better turned to account than many of our cathedrals. The other churches of Bâle are also similarly treated, and seem well-proportioned and spacious generally, with apsidal ends. In one of them—St. Martin's—by permission of the authorities, the service of the Church of England is conducted for the benefit of tourists, and it seems well suited for that form of worship. This church and two or three others possess towers of a very simple and graceful form, with a high-pitched gabled roof, in the centre of which stands a flèche, as in the sketch of St. Leonhard's Kirche submitted. It was rather noticeable on our tour that nearly every city had its own peculiar style of tower, which, though often repeated in the same city, was seldom found out of it. This will appear further when we come to Lucerne, Genoa, and other cities in Switzerland and Italy; but concerning this Bâle form of tower, it has been often repeated of late years in England, but generally without the flèche—a feature of essential importance that ought on no account to be omitted, as giving an apex or point of union to the whole composition.

The style of colored slating in patterns used in this city is deserving of note, as seen to the roof of the cathedral and also on the towers of the city gates, which are very picturesque, and seem to have been recently restored.

Among the modern buildings, the Elizabeth Kirche demands some notice—a very costly and substantial work, shewing a fair knowledge of German Gothic detail, but in its general composition wholly at variance with every sound principle. It is simply a large and very lofty hall, with a tower and spire at the entrance end, the really noble height of which is dwarfed by its being mixed up with the building from which it rises, and the whole structure is certainly a quarter of a century behind the numerous similar cotemporary buildings erected in England for the Church of England or various of the leading denominations of dissenters. The Museum in the same city—a fair piece of modern Greek architecture—is chiefly interesting from the works of Holbein contained it it. The other modern buildings of Bâle—such as the railway station, hotels, banks, &c.— are very creditable, being chiefly in the modern French style.

From Bâle to Lucerne, *viâ* Olten, is a journey by rail occupying only a few hours, and mostly over a country not possessing any remarkable features. The lake of Sempach, passed on the left, gives but little promise of the gorgeous lake scenery soon about to be realized. However, on nearing the end of the journey the magnificent range of mountains known as the Bernese Oberland come into view, and, for those who for the first time gaze on peaks clad with perpetual snow, excites much interest, the difficulty of distinguishing mountain peaks from clouds becoming apparent. The two advanced outposts of the Alpine range towards north-western Europe, Mounts Pilatus and Righi, soon loom into view—the former, as usual, covered with the mists which superstition ascribes to the unquiet spirit of the unjust Roman judge who is said to have ended his days upon it. Beneath and between these mountains lies the pleasant and picturesque city of Lucerne, not quite so clean and thriving in appearance as Bâle, but far exceeding in its lovely surroundings, and, from the vast concourse of tourists, enjoying a fair measure of prosperity. Hotels of stupendous dimensions and lively and cheerful aspect open their hospitable doors on every side; and not content with such existing vast buildings as the "Schweizer Hof," "Schwann," and "Luzerner Hof," the enterprising hotel-keepers are about opening another and more colossal hotel on a beautiful site by the margin of the lake. This building, which I went over carefully, is a very respectable piece of modern hotel architecture, constructed of unusual solidity, and of remarkably good workmanship. The amount of timber employed is to our ideas excessive, as will appear from a few notes of the style of construction adopted which I jotted down; but it should be remembered that this is a country where wood is cheap, the vast forests of Germany being comparatively near. The rushing Reuss, at the embouchure of which Lucerne is situated, is spanned by several bridges, one of which, with its covered way, towers, and paintings, is remarkably picturesque and quaint; but the city walls, with their numerous towers, are still more interesting. These walls form a circuit enclosing the town, and run up and down over the hills and valleys indifferently; and at every turn there is a tower, each one having a family resemblance to the others, but yet sufficient individuality of character to give it a separate interest. I sketched a few of them, and one in particular, with a twisted spire, is remarkable. The two western spires of the cathedral in the same city are also worthy of note, and not ungraceful in effect; and somehow these slender and picturesque spires and spirelets seem to harmonize well with the mountain scenery around, as may be judged by the photograph exhibited. The "lion" of the place in the way of art is, of course, Thorwalsden's lion, carved out of the side of the cliff, in commemoration of the heroism of the Swiss guard in the service of the French Bourbons; and amid the extremes of prosaic commonplace on the one hand, and rabid sensationalism on the other—so frequently reached in modern monumental sculpture,—it deserves notice as a simple and expressive conception, ably and simply realized. I shall have occasion to notice, presently, how remarkable it is that—though the study of natural history is so popular in our country, and our animal painters have attained such a high point of excellence—the study of animal forms, other than the human, seems almost totally neglected by our sculptors. And yet, whether for decorative purposes in connection with architecture or for monumental subjects, if sought to be anything more than stiff portraits, what importance is to be assigned to the judicious use of the forms of the brute creation is shewn by the extent to which they were used by all the great nations of antiquity. In the Egyptian, Assyrian, Greek, and Roman sculptures the forms of the lower animals occur almost as often as the human, and rendered with wonderful force and truthfulness too; but almost our greatest name in sculpture—the late John Gibson—when given an order for an eagle, replied that it was not in his line; and our Government, after waiting for years to find a sculptor capable of executing the lions for the base of the Nelson Column, had to get them designed by a painter and executed by a foreigner. I believe it is to be ascribed to the fact that in this country the sculptor can look for but little but private patronage, and is therefore obliged to limit his study and practice to one or two classes of subjects—prosy portraits or classical nudities,—and has rarely, if ever, an opportunity of exercising his talents on such natural and colossal subjects as those in which Rauch, Schadow, and Schwanthaler excelled. But even while dependent on private patronage alone, it is questionable whether our sculptors would not do well to take the hint, and extend their art to all that is is so thoroughly capable of reaching. Our sculptors rarely attempt anything but portrait statues to order, standing, sitting, or on horseback, as the case may be, and occasionally attempt an "Eve at the Bath" or "Diana at the Fountain," to get an opportunity of showing their knowledge of the nude; whereas there is scarcely a subject in all nature that foreign sculptors do not attempt, if not in colossal works such as those above alluded to, at any rate in cabinet groups and those lively models for bronzes in which the French so much excel, and for which the demand in this country seems large enough. And undoubtedly the general knowledge of modelling and grouping which is thus diffused tells very strongly on the application of sculpture to buildings, with which it seems so thoroughly to incorporate, so that neither the building nor the sculpture would be complete without the other; whereas sculpture, whenever applied to our buildings, seems to be a semi or wholly detached sort of thing, that would do just as well anywhere else as in the place it occupies. Our modern Gothic style of architectural sculpture is an improvement on this, certainly, but as yet is too limited in its scope, rarely going beyond the carving of caps and filling of spandrils; whereas it ought to be capable of far greater things, and should not be limited either to one style, but able to adapt itself to the tone and requirements of every style that may be recognised and practised. I am quite aware that in these remarks I fall foul of all those ardent disciples of one school or another, who can see no beauty or excellence in any style except the one which happens to be their favourite, and who sometimes make it matter of boasting—as a well-known architect tourist does—that they would not so much as turn aside to view some justly-celebrated work because it happens not to belong to their peculiar phase of art, as though the principles of taste were not one and the same for all styles of art, independent of individual characteristics, just as in nature the principles of beauty are the same, no matter how diverse the forms in which it may exist; or in ethics the principles of justice and morality are the same, no matter how many different forms of religion and government they may be applicable to.

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[*] Read at Ordinary General Meeting of the Royal Institute of the Architects of Ireland, April 21st, 1870, by Mr. William Fogarty, F.R.I.B.A., Fellow.

With some apology for this digression, in which I may be considered to have wandered from my proper theme, I am almost forced into another while recounting the feelings experienced during a voyage through the Lake of the Four Cantons, from Lucerne to Fluellen. Very beautiful indeed is this lake, with its four spreading arms, and ever-varying panorama of mountains and headlands, studded with pretty villages and chalêts, or else bare in rugged grandeur. But I must honestly confess that the first view of the Swiss scenery never affected me like the first view of our own Lakes of Killarney. The mountains about Lucerne may be five times as high as Carran Tual or Mangerton, and the Lake of the Four Cantons as much deeper than the Lake of Killarney, but our island scenery has still a beauty and tenderness peculiar to itself, and it does not suffer by comparison in any other way than in point of dimensions. I think my feeling on this subject is quite in accordance with what I have endeavoured to express above. Nature has her different styles as well as art, and it is but a narrow-minded and unworthy mode of studying either, which does not seek for an appreciate excellence in whatever varying form or phase it may be found.

The stupendous barrier by which Italy is fenced off from Northern Europe leads one to reflect on its former greatness, as in some respect owing to this as well as to its otherwise sea-girt position. If the modern greatness of England be due, as is often said, to its insular position, doubtless the similar position of Italy had much to do with its past proud eminence as the mistress of the world. But then the contrast between ancient and modern times is forced upon us, and the fact that, notwithstanding all its natural fortifications, Italy has, more than any other country, been the subject of foreign intervention and oppression. Let us hope that now, united under one form of government, the unquestionable strength of her natural position will soon tell on her material prosperity, and that the country to which the rest of Europe owes so much will not be left behind by other nations which were sunk in barbarism when she flourished in all her pride.

How Hannibal, Attila, and other such heroes managed to scale the Alps and invade Italy we learnt in our school days, and how Napoleon dragged his legions and his guns over the great St. Bernard is also matter of history. That commanding genius accomplished a noble work in the construction of two of the great roads, the Simplon and Mont Cenis, both of which are marvels of engineering skill and sound construction. The St. Gothard route, which we selected as our entrance into Italy, had to be constructed as a matter of necessity after the others were opened, and as one of the latest specimens of Alpine road making is very interesting. The route seems to have been most skilfully surveyed and laid out, and the gradients are very easy. Of course to accomplish this, while ascending a pass about 6,000 feet high, the road had to be twisted corkscrew fashion at a great many points, giving the traveller by the diligence a wonderful series of views of the vast mountains and gorges around. The villages and towns of Fluellen, Altorf, Amsteg, Andermatt, and Hospenthal are passed at various elevations, and one is struck by the simple and effective outlines of their churches, generally consisting of a single nave with apsidal end, and a tower with bulbous top of various proportions, a few specimens of which we sketched. The walls are generally plastered white, and there is no detail worth mentioning, as indeed it would be completely thrown away, as who ever stops in these villages to appreciate it, whereas the effective outline and grouping of the churches and their towers can be seen for miles by every traveller.

At Hospenthal we remained two nights, devoting a day to an excursion transverse to our regular route, in order to get a glimpse of the Furca Pass and Rhone glacier. The former is one of the latest public works undertaken by the Swiss government for military purposes, and unites the two great roads of the Simplon and St. Gothard nearly at the highest point of the latter. It ascends to a height of about 8,000 feet, and is the highest carriage road in Europe except the Stelvio, constructed by the Austrian government, through the Tyrol. The same system of scaling the heights by bends and turns had, of course, to be pursued here, and having reached the highest point of the pass from the St. Gothard side, the vast cataract of ice forming the Rhône glacier came into view, seeming to fall from nearly the same level as where we stood, and to pour down and extend for thousands of feet into the valley below. Down the side of this glacier the diligence proceeds by a series of bends and turns, and at length we stood at the base, and pushed our way into the dripping ice caves where the Rhône finds its source. A short excursion across the crevassed surface of the glacier was enough for us, and having climbed again to the summit of the Furca, we awaited the return of the diligence to take us back to Hospenthal. From this point a wonderful view is obtained of the Oberland, including the well-known peaks of the Jungfrau, Eiger, Wetterhorn, Finster-Aarhorn, and Galenstock; and, as a passing glimpse of the wondrous Alpine scenery, was a thing never to be forgotten. The next day we resumed our southward journey, soon reaching the summit of the St. Gothard, a level valley, with several lakes, indicating volcanic origin, and then proceeded to descend, by a similar series of bends, through the valley of the Ticino to Faido, Airolo, and Bellinzona. Soon again the sides of the mountains became clothed, the churches passed show unmistakably their affinity to the Italian types, and the Italian language greets us, not alone in the signs and notices on the inns, but also in the salutations and importunities of the natives who surround the diligence at every stage.

From Bellinzona, the most direct route to Milan is by land, but, as we preferred the sail through the Lago Maggiore, we started next day for Magadino at the head of the lake, and thence by steamer enjoyed a most delightful sail through that noble sheet of water. The scenery at the upper end almost approaches the wildness of the Swiss lakes; but soon the mountains at each side diminish in height, and the shore scenery assumes a softness which contrasts very strongly with what we had passed. Having touched at one or two Swiss ports, an Italian custom-house officer came aboard, and our next station was in the newly-organised Kingdom of Italy. The celebrated Borromean Islands are next passed, and in particular the Isola Bella, an island which certainly was highly favoured by nature, but which art can hardly be said to have improved, as it is nearly covered by a huge chateau or palace, out of all proportion to the site, and what little of the island remains uncovered by buildings is cut up and built into terraces and parterres of the most stiff and formal character. Baveno, on the Simplon road, where the granite quarries exist from which the columns of several of the largest buildings in Italy have been obtained, is also passed; and we arrive at length at Arona, where first we tread the classic shore of Italy. A prominent object on reaching this place is the colossal bronze statue of St. Carlo Borromeo, whose birthplace it was. It is 60 feet high, but, I should think, otherwise uninteresting; and I understand amid its recesses numerous owls, bats, and other such creatures have made their habitation. Thence to Milan is but a short journey by rail, the country about being as flat as a pancake, but occasional glimpses of the Alps in the distance are still obtained.

The railway station at Milan is certainly a very creditable building, and very complete in its arrangements, the waiting-rooms being adorned with frescoes of high class, and the principal façade very appropriate and ornate though rather French than Italian in style. The "facchini," or town luggage porters whom one encounters here for the first time, seem thoroughly alive to the power of combination, as they have a "societá" and "tarifa" for the protection of their rights and fees, which more dignified professions amongst us find so much difficulty in maintaining. Soon we were housed in the immediate vicinity of the Duomo, which stands almost in the centre of the city, the streets radiating from it in all directions, like a spider's web. The narrowness and tortuousness of these strikes the stranger at once, as, with few exceptions, they are but 10 or 12 feet in width; but this seems almost a necessity of the climate, and an almost universal characteristic of the older Italian cities. Its peculiar plan, and the absence of all parallelism in its streets, also the want of a base line by which to govern one's observations, made me feel Milan more difficult to traverse than any other city except Venice.

A glimpse of the cathedral by moonlight is certainly worth getting, and I am inclined to think that is the best way to appreciate its exterior. Compared with many other cathedrals, it is well placed, in being completely isolated, with a spacious square or piazza all round; and the design has been followed out all through with a degree of homogeneousness not often seen in so great a work. The unity of the general outline, the material—white marble,—and the vast number of pinnacles, small turrets, and perforated parapets, produce an effect of richness and magnificence quite sufficient to account for the raptures in which most travellers are thrown by the first view of this building; and seeing it by moonlight is the best way to get into them, as the barbarous detail, repeated *ad nauseam*, which no educated eye can tolerate, is not then apparent. The next day's morning light, however, dissipates a good deal of the enthusiasm one is inclined to feel, but nevertheless there are still many points about this great cathedral well deserving of admiration; for instance, the plan of the entire structure—a nave, with double aisles and transepts—is at once apparent from even a glance at the exterior, and this gives a simplicity and unity to the entire composition, which is no ordinary merit. The general outline of the elevations also is satisfactory, as, though it has neither western towers nor a great central tower, there is quite enough of apex and verticality given by the great height of the western gable and the octagonal lantern at the crux. Of course it is well known that the design of this cathedral was the work of a German, and consequently an exotic, having no relation whatever to the Italian Gothic style, and yet so far different from German Gothic as to become a hybrid—neither one thing nor the other.

Mr. Street's criticism on it, in his interesting work, "Brick and Marble in the Middle Ages," is undoubtedly correct, and is what every intelligent architectural critic must agree with:—"It has all the appearance of having been the work of a stranger who was but imperfectly acquainted with the wants and customs of Italian architecture, working to some extent with the traditions of his own native school before him, but at the same time impressed with a strong sense of the necessity under which he lay of doing something quite unlike what he had been taught to consider necessary for buildings in his native land." On perusing it, one is led to wonder how the eminent architect who penned it could fall exactly into the same error himself, as was evident to me on meeting with a sketch for a church for the English community at Genoa, designed by him. A building for such a purpose had need, in order to meet the requirements of the English ritual, to be in accordance with English ideas to some extent, and so it is; and one would think the English Gothic style would be most suitable and expressive in all respects, as is well shewn by the English church at Naples; but instead of that he must needs reproduce the architectural features of the Genoese Gothic, with wonderful accuracy and fidelity to be sure, but with a degree of slavish adherence to precedent unsurpassed by the most rigid disciples of the Classic or Renaissance schools. This "in a leader of a school of architects, which professes to regard with contempt others as exclusive in their rules, narrow in their practice, and conventional in all their proceedings, representing no new idea, having no new thought," &c., and themselves as "striking out paths for themselves yet untrodden, gathering thoughts from nature, life from the intense desire for reality and practical character, faithful moreover to a religious belief whose propagation will be for ever the great touchstone of their work," strikes one as rather inconsistent, and causes us to recur to the old maxim, "those who live in glass houses ought not to throw stones." I shall have occasion by and by to observe how remarkable it is that the modern art-cliques or sects can never be content to let their own work speak for itself, but must indulge in a severe style of criticism on that of all who do not belong to their peculiar sect, which, if applied to their own doings, soon overwhelms them as contrary to every principle insisted on. I firmly believe myself that the modern school of architects, which can see no beauty in anything that is not Gothic, and a very particular type of Gothic too, is one of the narrowest and most exclusive of the art sects that has ever appeared; and I question much if their present popularity, at least in certain directions, is not simply because the type of Gothic they have selected happens not to have been so extensively run upon and used up as other types, and accordingly is just now fashion, with as much reason as the cotemporary fashions in dress.

The west front of the cathedral contains several doors and windows of Classic or Renaissance type, the work of later Italian architects, and very fine they are in themselves, though incongruous in the façade of a Gothic cathedral. This, of course, give rise to much indignation on the part of critics of the school above mentioned, and perhaps justly so; but how do they deal themselves with large Classic works when called upon to add to or restore? Mr. Ruskin's advice is, "no matter what style your building is, it will be no worse for having a bit of good Gothic added to it in the shape of a door, window, or porch;" and I presume it is in pursuance of this principle that one of our large city churches in Dublin, dating from the time of Queen Anne, I believe, has had a new front put to it in the Lombardic style. I think the scriptural rule, "do unto others as you would they should do unto you," might well be applied in this case. If it be high treason for the architects of the Renaissance to put doors, windows, altar-screens, tombs, &c., of Classic design into the mediæval churches they were called upon to work in, what sort of apology can be pleaded for the converse process, so boldly advocated and indulged in? I presume to think that an architect, called upon to add to or restore any decent sort of building, would act most in accordance with sound principles both of taste and morals by carefully studying its previous plan, with a view to ascertain what worthy idea, if any, existed in the mind of the original architect, and to use his best efforts to develop and improve that original idea, and produce a harmonious whole, rather than rudely denounce the work of his predecessors as insufferably bad because it may belong to a style with which he has no sympathy, and proceed to shew how much better he can do by placing in contrast with it some modern reproduction of some other style which happens just then to be most in fashion, however at variance with that in which the original architect worked.

Whatever adverse criticism may be pronounced as to the exterior of the Duomo at Milan, most are agreed that the interior is deserving of the highest praise; but this is simply owing to the excellence and simplicity of the plan, to which I have already adverted, as apparent from the view of the exterior. The amazement which Mr. Street experienced when he entered the western door—"that the same mind which conceived the exterior should have been able also to conceive anything so diverse from it as the interior"—did not all occur to me, as the nobility of the plan is quite evident from the exterior, though undoubtedly it tells most in the interior. The plan and section are, in fact, honestly enough allowed to govern the exterior—a rare thing in Italian churches;—and though the exterior detail is so bad, that of the interior is not very much better, but the general effect of the interior is nevertheless quite worthy of the enthusiastic terms in which Mr. Street speaks of it. How else to account for this, except from the stately size and sound proportions observed, I cannot imagine; and yet this quality proportion is what the modern ultra-Gothic school would have us ignore altogether, and place our great reliance on detail, which in this remarkable instance is nowhere.

The lightness of the supports, the number and spaciousness of the bays—allowing the eye to range with comparatively small interruption from north to south and east to west—and the general lightness and spaciousness, are very striking, accustomed as we are to see the interiors of large churches blocked up with massive piers and screens, allowing not a fourth of their real size to be seen. The two spacious pulpits, situated on the piers immediately east of the transept, are well placed to allow of a large congregation being addressed. They are very curious works in themselves, though incongruous, being of *cinque cento* bronze work, large enough to hold a dozen men each, and with sounding boards overhead, which seem to answer their purpose, as I could hear a preacher with distinctness for a very long distance off. The effect is quite worthy of the metropolitan church of an important province. The simplicity and efficiency of the arrangements by which a large congregation can listen to a preacher contrast favorably with the cumbrousness and inefficiency of those adopted in our own metropolitan Cathedral of St. Paul, and leads one to reflect why should not the Church of England, which so much more than the Roman Catholic Church attaches importance to preaching, turn its cathedrals to the very best account for that purpose. Even to those unacquainted with the Italian language, it was still a pleasure to hear its musical accents well delivered by an eloquent preacher, to whom the large pulpit gave full room for all those changes of attitude and action so essential to the full force of eloquence.

Need I say that this noble pile contains a vast number of art treasures of different epochs. The enclosure around the choir, of pure classic design, struck me as peculiarly chaste and elegant; and as it is distinct from the piers between which it is built, does not look so very incongruous as might be supposed. The capitals of the nave piers are worthy of note, forming elongated pedestals and niches for statues; an arrangement which, in a church of such of such dignity and proportions, produces a fine effect. The groining of the nave has been, however, execrably disfigured by painting it to represent tracery, and is a grievous blot on the effect of the interior. The same thing is done also in the vaulting of the choir, but there it is filled up and gilt so as to look at a distance more like diapering, and the effect is so much better. An ascent of the roof and tower shews the solidity of the structure, the roof as well as the walls being of marble; and also shews the inferior style of carved ornament repeated on the pinnacles *ad infinitum*. The niches are filled with hundreds of little statues, too little to be appreciated, and of all possible sorts of subjects, from the heathen mythology to the Christian Church history.

A fine view of the city, of course, is obtained from the top of the lantern, and the general prevalence of brick architecture in its other churches very manifest. Pre-eminent among these rises the tower of St. Gothard, a graceful octagonal structure of red brick with marble shafts at the angles, well illustrated in the accompanying photograph. The brick architecture of the early churches of Milan is in fact far more characteristic and indigenous than that of the cathedral, which, as already described, must be considered as exotic, or even than the later Renaissance, which was derived chiefly from Rome. This style we are in the habit of designating as Lombardic, and it is deserving of much study, for which an extensive field is furnished by the numerous churches scattered through the city, few of which, however, but have been much affected by modern additions or transformations.

The Church of St. Ambrogio deservedly occupies the first rank among these; interesting from its high antiquity and the honoured name of the prelate to whose memory it is dedicated. It is also remarkable as exhibiting in its plan the earliest type adopted in the Christian church, of which St. Clemente, at Rome, is the best known example,—the basilican, with an atrum or enclosed court at the entrance. This, which dates from the ninth century, and the façade of the church proper, with its bold arches and two campaniles, are some of the most interesting features. The interior, with its semicircular apse enriched with mosaics of venerable antiquity, and the numerous objects of early Christian art with which the church is filled, constituting a perfect museum of Christian antiquities, make it second in interest to scarcely any other church in Christendom, and deserving of the deep reverence with which it seems to be regarded.

The Church of Sta Maria della Grazie, of later date and unusual size, is a fair specimen of the Lombardic-Gothic in brick; of which also S. Eustorgio, S. Maria presso S. Celso are examples. A few specimens of the cornices and other details we sketched; they display much skill in adapting the material to the purpose, but I think one soon gets tired of them, feeling that the capacity of bricks, varying but little in size, for the building of cornices and other decorative features is very limited. We find, however, that the moulding of the bricks into ornamental forms was soon adopted, and for some time previous to the revival of classic details used with considerable taste and judgment, as in the façade of the Ospedale Maggiore (or general hospital) and Lazaretto; but this had scarcely begun when it was swallowed up by the classical revival, and the mouldings from that time became mere imitations of classical forms in poorer material. This can be observed in two different portions of the front of the hospital, one of which shews the mouldings as yet uninfluenced by the classic revival, and the other as they appeared when its influence became dominant.

Of course a visit to the celebrated "Cenacolo," or Last Supper of Leonardo, in the monastery adjoining Sta. Maria della Grazie, could not be omitted; and its melancholy condition gave rise to many reflections in my mind, which subsequent observation has confirmed, as to whether fresco painting be not, on the whole, a mistake. No doubt the accomplished artist committed a mistake in this picture by the employment of some deceptive materials—and this can be avoided; but when one sees the great works of Correggio at Parma miserably blotched and decayed, and other works of great masters undergoing hopeless destruction from being painted on such a perishable and unmanageable surface as the plastering of a wall must always furnish it strikes one that some surface better qualified to preserve the work bestowed on it would have been worthier, at least until our artists can discover methods of preparation and colouring such as the Egyptians and Greeks seem to have been acquainted with, as would appear from the brilliancy and perfection of their work in the tombs of Thebes and the houses of Pompeii.

Milan contains a vast amount of good Renaissance work scattered thorough its various edifices: for instance, the octagonal baptistery attributed to Bramante, in the Church of S. Satiro; the interior of the great Hospital; and the interior courts of some of its palaces. In these latter especially, classical architecture is treated with a freedom and skilful adaptation to the purpose required quite sufficient to refute the reproach now so commonly hurled against it by the disciples of the ultra-Gothic school as being "rigidly trammelled by the rules of three centuries destitute of freshness and originality," &c. The men who designed these courts knew how to recognise and adhere to rules where to do otherwise would be barbarism; but they also knew how to enter into the spirit which originally dictated these rules, and to vary from them or devise new rules when altered circumstances required it. The variety and freshness shown in the treatment of these three internal courts is very remarkable, while the refinement and elegance of classic architecture is strictly maintained. Of course they are all three open to the shallow criticism that they do not comply with rules which, when examined, will be found to have been framed for totally different circumstances; but it is enough that they display an appreciation of the principles on which all just rules should be founded, and furnish in themselves new rules for all who would have hereafter to deal with similar exigencies.

The exterior of the Broletto and Loggie dell' Orsi, two civil buildings in the centre of the city from which I made a few sketches, illustrate this also.

The buildings of more recent date are also well deserving of study. The celebrated Scala theatre is, I believe, the largest in Europe, and very noble and simple in its internal arrangement,—far beyond anything we can shew in this country. The viceregal (now royal) palace and villa are very magnificent, and so also is the "Arco della Pace," or Arch of Peace, as it is still called; one of the numerous works with which the first Napoleon delighted to commemorate his achievements, and which were afterwards made to record his overthrow. The last inscription on this, however, records the triumphal entry of Napoleon III. and Victor Emanuel after the Battle of Magenta, and so having for over thirty years glorified the house of Hapsburg, it now returns to record the triumphs of a rival dynasty. *Sic transit gloria mundi.* It is certainly, always excepting the noble Arc de l'Etoile at Paris, one of the finest of modern triumphal arches, executed in white marble, with carefully-drawn and well-proportioned detail. In an excess of classicism, however, the sculptors have represented all the French and allied troops in the various battles prior to the peace of 1815 in strictly classical costume—a monstrous piece of absurdity that no amount of withering criticism is too strong for, displaying as it does the feeble grasp of mind which could only imitate the mere accidents, ignoring the principles of the ancient sculptors. Perhaps, however, the sculptors are not so much to blame as the critics and those whom they strove to please. The Greeks did not represent their heroes in Egyptian or Assyrian costume; nor did the Romans, though their admiration for Greek art was very high, portray their legions in any other but the dress and arms they actually fought in; and, we may ask, had they not done so, how little would be the value of their bas reliefs either in a historical, antiquarian, or artistic sense? The mediæval painters and sculptors, when they attemped past historical subjects, used the costume of their own time just because they knew no better, but when they attempted cotemporary history, rendered it honestly and truly. It remained for the nineteenth century to perpetrate the outrageous falsehood of reporting the battle of Leipzig as fought by cohorts and legionaries such as might have been commanded by Julius Cæsar, as appears on this monument. The same wretched sport of ultra-classicism has prevailed too much in our own country also, as may be seen in so many of our public monuments, and would not be deserving of so much notice, were it not in danger of being supplanted by an equally wretched spirit of Mediævalism, which would put all our modern monumental and historical sculpture into the costume of the Middle Ages, instead of that of the ancient Greeks and Romans, merely substituting one set of artistic lies for another. When shall we find our painters and sculptors, especially the latter, content if they can record and illustrate that truth, which is far stonger and more thrilling in its incidents than fiction, instead of endeavouring to "idealise" or, in other words, "botch it up" with their own fancies.

The Church of St. Carlo—an immense modern circular domed building—is one of the most uninteresting, notwithstanding its size and the costliness of some of the materials, I have ever seen. The dome completely overpowers the portico, and the rest seems sadly to lack sculpture or something to give it life and interest. There are, however, several very gorgeous churches of the last century, such as in the other large Italian cities, sometimes skilfully planned and richly decorated.

The amphitheatre—a scheme which Milan owes to the imperial will of Napoleon, who, in this as in all his public works, showed so fully the same spirit which actuated the Roman emperors—is interesting, based somewhat on those of antiquity, but by no means so solid and enduring in its construction. The country round Milan is so flat as to make its suburbs very dull and uninteresting, except in one direction, where the new gardens have been formed, which are handsomly laid out and ornamented. Some Roman remains exist in different parts of the city, especially a Corinthian colonnade of grand proportions standing now nearly in the middle of one of the public thoroughfares. The Academy of the Brera is rich in treasures of painting, including the celebrated "Sposilizia" in the earlier manner of Raphæl, and the "Expulsion of Hagar" by Guercino; and the exhibition of the works of the modern Milanese painters and sculptors, which was just open at the time of our visit, was very interesting. I should not forget to notice the modern improvements in which, as I understand, a large amount of English capital has been invested, I fear with but little hope of return for many years. The immense and magnificent arcade, which far exceeds anything of the kind either in Paris or London, is a very fine idea, and ably carried out, but would seem far better suited for a climate such as our's than for this. The entrance is a remarkably clever piece of treatment of an awkward-shaped piece of ground, and is shown by the accompanying photograph.

(To be continued.)

THE NEW LAW CLUB, NASSAU-STREET.

We give with this number a lithograph illustration of the new premises lately completed in Nassau-street for the Law Club of Ireland. In our number for March 1st will be found a lengthened description of this building; it is sufficient now to ask our readers to refer to it.

TIMBER SALE.

We would beg to direct attention to the sale of timber advertised in our columns to take place on Tuesday at Mr. Richard Martin's stores, Sir John Rogerson's-quay. It is well worth a visit from the trade.

ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND.

An ordinary general meeting of the Institute was held on Thursday evening, the 21st ult., Mr. Parke Neville, C.E., V.P., in the chair.

Mr. George Booth was admitted as a non-professional associate.

Mr. William Fogerty, F.R.I.B.A., fellow, read the first part of a paper entitled "Notes of a Recent Tour in Italy," which was illustrated by an admirable series of drawings made by himself and by Mr. Longfield, by whom he was accompanied. In consequence of the length of Mr. Fogerty's paper, the reading of the continuation of it was postponed until Mr. Fogerty's next visit to Dublin.

The Fitzgerald medal was presented to Mr. Thomas Collot for his admirable measured drawings of Grey Abbey, Co. Down, one of which was given in our last number.

There was a special meeting of the council of the Institute on Monday morning last, the president in the chair, to consider a communication from the Royal Institute of British Architects on the subject of an architect's property in plans, and the legal proceedings about to be taken by the First Commissioner of Works against Mr. E. Barry, R.A., to compel him to give up all the drawings of the Houses of Parliament made by the late Sir J. Barry to that department.

It was resolved to endorse the decision of the British Institute, and that of the other architectural societies in England in support of Mr. Barry's position.

ENGINEER'S TABLES.

Messrs. Spon have issued a neat tiny volume —measuring 2⅝″ × 1⅜″—entitled "Tables and Memoranda for Engineers, selected and arranged by J. T. Hurst." It contains 80 pages of tables printed in very small, but legible, type. Neither its size nor its price can break the pocket or the purse of an engineer, to whom it will be a *vade mecum.*

WAR DEPARTMENT CONTRACTS.

We are happy to learn that Messrs. J. and E. Barker, of Upper Abbey-street, have again been favored with the contracts for executing all works required to be done at towers and batteries north and south of Dublin Bay, under the War Department, and which were advertised in our columns.

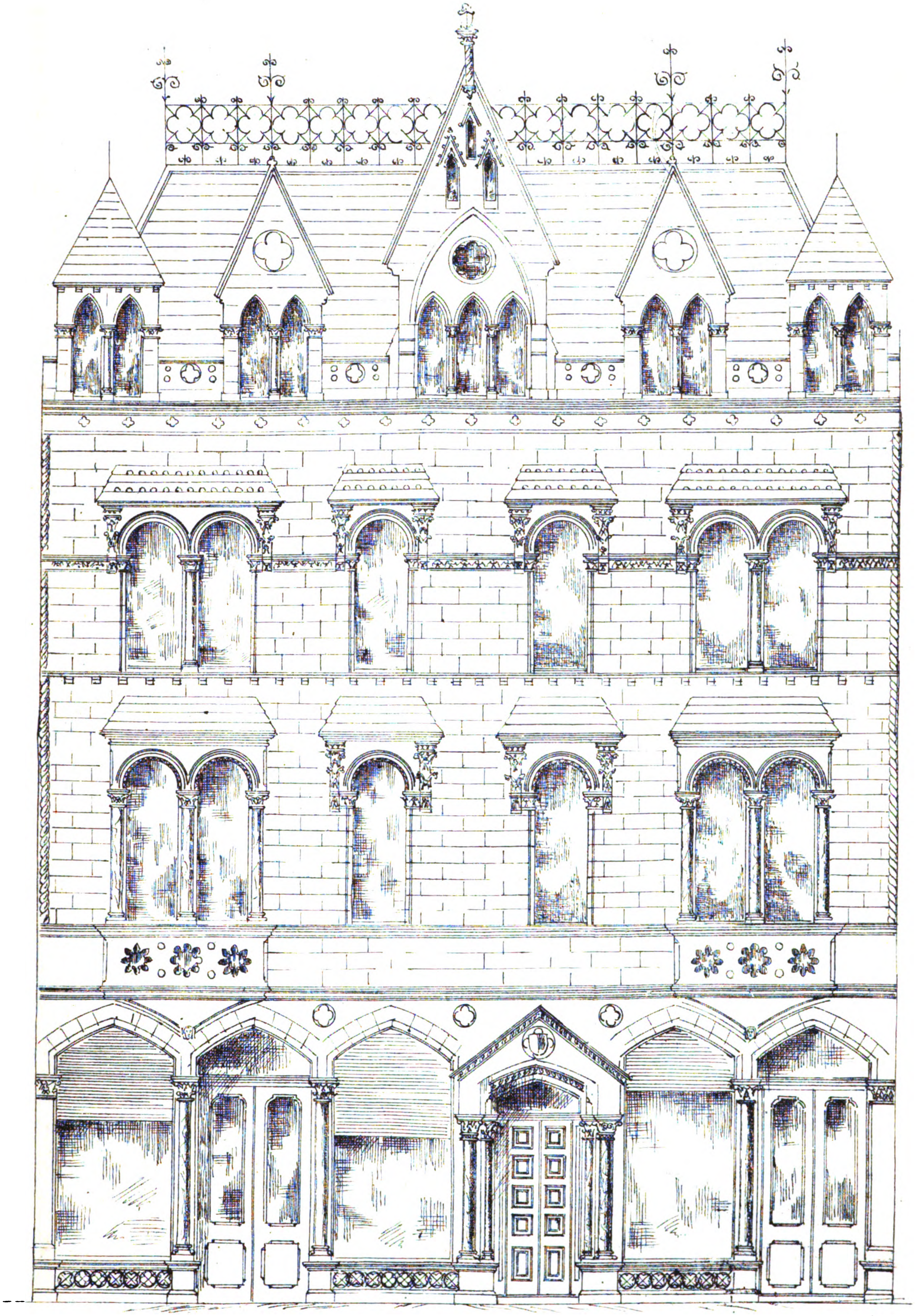
DESIGN IN SHOP FRONTS.

(From the *Building News.*)

A shop front must always necessarily prove a very tough architectural subject—so tough, indeed, that numbers of architects are content to leave it alone altogether. An exceedingly common practice is to throw a strong bressummer across the whole front of a new building at the height of the first storey, and merely propping it up with one or two thin iron pillars, leave a gaping chasm below, which the shopkeeper may afterwards fill up at his pleasure with any deformity his own want of taste, or that of the mechanic he employs, may dictate. The upper part of a house, which in ordinary streets comes least into view, will thus often give tokens of having been designed with a knowledge of the rules of architecture, while the lower portion—the shop, which is the most prominent feature, and is capable of giving picturesqueness and completeness to the whole—will consist either of the gaping chasm aforesaid, enclosed but not concealed with plate glass, or of some pattern selected from the stores of a manufacturer, entirely out of keeping with the elevation of the house front above. There are two main reasons for this. The first is the deficient taste of the shopkeeper, and the other the neglect of the profession to study so commonplace a subject.

As to the taste of the shopkeeper, he believes in unlimited plate glass, or if he cannot satisfy himself in that respect, he seeks the most staring pattern he can get, to distinguish him from his neighbours. As to plate glass, he counts the inches with as much eagerness as a farmer does his acres of land, and thinks they are productive in much the same manner. His rent is regulated to a very large extent by the length of his frontage, and he naturally thinks it to his advantage to utilise every possible inch of it for the display of his goods. He therefore votes every pier which supports the superstructure an obstruction and a nuisance, every pillar must be as thin as possible, and be put as far as it can out of sight, and the whole upper part of the building, as far as appearances go, must either hang unsupported in mid air, or threaten to prove too heavy some day for the thin weak columns and insufficient piers.

These remarks apply, we must confess, principally to second-rate shops, and to frontages of small extent. When shops are built upon a large scale in commanding positions, and where the upper floors are used, as well as the lower, for the display of goods, it very often happens that an architect of some skill and reputation is employed, and then, of course, the whole elevation of the building, including the shop front, is entrusted to him; the larger scale on which he is able to work affords him some scope for carrying out his ideas, and the result is that we get a fair average of successes. The smaller shops, however, occupy collectively a much larger extent, and in the great variety of treatment which can be admitted, afford a very wide field for the exercise of skill. That they should be left to the undirected taste of the shopkeeper or the mere carpenter we believe to be a waste of every-day opportunities, which numbers of men profess only to want, and upon which it must be said the architectural profession is more dependent, perhaps, than any other. Besides the inherent difficulty of the subject, we fear that another cause of its neglect must be considered that common infirmity of our human nature, the desire to do something grand and striking, to the neglect of that which is homely and commonplace. We could get thousands of designs to order any day for cathedrals, churches, townhalls, palaces, and manions, but in domestic and street architecture, just the subjects in which variety is most possible and most picturesque, we find the greatest paucity of ideas, and the most inconsiderable number of varieties. We believe, however, after all, the main reason why we have so few artistic shop fronts is to to be found in the many contrarieties which have to be reconciled in them. The shopkeeper requires his gaping chasm and his plate glass. He is firmly con-



THE NEW LAW CLUB — NASSAU STREET.

J. MC CURDY. ARCHT

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vinced that the open space serves his purpose best, and when he yields a little on this point he insists on as much meretricious and gaudy ornament as possible, to attract customers. His experience has taught him that customers are attracted by such means, and until the general public are more widely imbued with an appreciation of true art principles the gaudy and flimsy will continue to be attractive. Thus we come round in this matter, as we do in every other branch of inquiry respecting the non-progress of art, to the conclusion that its ultimate cause is to be found in the want of a general diffusion among the masses of the people of the faculty to appreciate the true and beautiful. The few who have studied deeply, and whose training and profession qualify them to guide, are driven, in such every-day matters, to become slaves of the lamp, and to follow where they should lead,

> Artistic laws the artists' patrons give,
> And they who live to please must please to live.

Thus our street architecture progresses far too slowly, and where we do not find a dull uniformity we are frequently afflicted with a medley of incongruous and unpicturesque notions worthy only of *une nation boutiquière.*

It is well, however, that artists should not altogether resign their proper function, which is to invent forms combing all that is useful and beautiful, so as to challenge and obtain a preference over inferior productions, and to educate the public taste to a degeee hitherto unattained. The exigencies of trade did not require large shop fronts in Classical or Mediæval times. If they had been required, the ancient architects would doubtless have found a way to reconcile the opposing reqirements of utility and æsthetics, and have left us precedents we might copy with as much satisfaction as most of their other small works, such as gateways, altars, tombs, chests, &c. The shop front is an artistic problem peculiar to the nineteenth century, and its solution can be found only by a general reference to well-defined principles and their bearing upon the peculiar requirements of the case.

In the first place, we think the practice of designing the upper part of the building only, and leaving the shop to be dealt with as an afterthought, is one that should never be adopted where it can be avoided. The shop is really the most important feature in the elevation, as it is the most valuable, and the upper parts should be subsidiary to it. Whatever style be adopted for the shop-front should be carried throughout, and the features of lightness and airiness should be in accordance with its general character.

Next, as to the lines of construction. The superstructure may be supported either upon arches or a bressummer. The former arrangement was often adopted in the mediæval shop fronts, of which some excellent examples are to be seen in M. Viollet-le-Duc's "Dictionnaire de l'Architecture Française." (Article, "Boutique.") These shops were, however, as noted above, very inconsiderable compared to those of modern times, and were, besides, entirely open to the street, being closed at night by wooden shutters, which were propped up by irons during the hours of business, and served in their upper portion for a canpy, and in their lower for a stall board. The arch construction labours under the disadvantage of requiring strong abutments to convey the weight, and these will occupy a greater portion of the space than can be allotted by the tradesman. An instance of this may be seen in some shops which are otherwise very excellently designed, now building and partly completed, in Villiers-street, Strand. The whole frontage of the building is of brick, strong piers being carried up to sustain a depressed circular brick arch spanning nearly the whole width, which supports the upper storeys. A plain beam is placed across the span at the spring of the arch, and the space in the head is filled up with an ornamental design. These shops have the rare merit of being perfectly truthful, and the result is very fair, but we fear the tradesman will wish some of the space occupied by piers had been left for his window. The pointed arch can very seldom be used effectively for a shop front, and should only be attempted where some forcible reason exists, such as the juxtaposition of any important buildings in the same style. We engraved, last year, the design of a shop front in New York, which consisted of an arch in the later decorated style of Gothic, of the height of three storeys. It gave one an idea of the western door of a cathedral, and, not to mention the solecism of such an enormous arch without any corresponding structure above, it appeared singularly inappropriate for a depôt of sewing machines. Mr. Gilbert Scott's shops adjoining the new Midland Railway Station, S. Pancras, have pointed arches in accordance with the general style of the building, and are well worthy of notice. He has made the head of the arch a very effective feature by introducing a simple pattern at the intersection of the sash bars with each other. As a general rule, the arch, if pointed at all, should be a depressed one, after the late Tudor pattern. A greater height will interfere too much with the storeys above, and will need buttresses, which the space cannot afford.

In very wide spans, however, it is evident that a depressed arch must approach too nearly to a straight line to be effective, and we must then use more than one arch, so as to form an arcade, or adopt the bressummer. When more than one arch is used, the general treatment may be much less heavy below, and great scope is afforded for ornament above. The columns supporting the arches should not, however, be put out of sight behind the plate glass, but be brought out to the front and show themselves. Some really good shops of this class may be seen in Throgmorton-street. The plate glass is placed in a recess, and the central columns stand in front, their position being made to coincide with the line of the sash bars. A tradesman accustomed to the prevailing notion of keeping the plate glass front entirely clear might object at first to such an arrangement, but an inspection will convince him that a front of this kind offers quite as little interruption to a view of the window and its contents as the common sash bars. A column of 6 in. in diameter placed in front of a recessed window in this manner will, in fact, interrupt the view rather less than two sash bars of 1½ in. each. The common practice of bringing out the glass to the extreme limit allowed by the Building Acts is not always the most effectual. Great advantages might be obtained if the practice of recessing the window were more frequently adopted, more especially in confined situations. The recess gives opportunities of display equal to those obtained by any other method, and offers, besides, a special attraction in the nature of a shelter from passing crowds, or from bad weather, which induces spectators to linger. The shopkeeper may thus find advantages to compensate him for the small sacrifice of interior space, and for permitting the use of a design which gives increased scope for truthful construction and artistic effect. A recessed window, in the most crowded situation, probably, in London, near the Cornhill corner of Gracechurch-street, in the City, affords an illustration of this fact. The situation is one of the most confined possible; and yet crowds are to be seen at all hours, leisurely examining its contents, without discomfort to themselves or interruption to the enormous stream of passing traffic. They are attracted partly by the paintings and fine chromos exhibited within, but in quite an equal degree by the comfort and security afforded by the recessed window. The idea of thus recessing the windows is, perhaps, one of the happiest that has been introduced into the subject, and deserves to be much more extensively worked for both æsthetic and utilitarian reasons. Another example may be seen at a stationer and bookseller's shop in the Bishopsgate-street portion of the same thoroughfare, which is also deserving of notice for the very tasteful combination of colours in the polychromatic decorations. These recesses are carried to the ground, enabling the spectators to stand within them; but even when this is not done a very good effect may be often obtained, with perfect architectural consistency, by recessing the window from above the height of the shop-board, and bringing the supporting columns to the front. An example of this may be seen in the Fleet-street front of a stationers' shop at the corner of Chancery-lane; and an inspection will show that the space for display is not appreciably obstructed, while the architectural effect in itself forms a feature of attractiveness altogether wanting in the common unrelieved plate glass constructions.

A PARAGON ESTATE.

MR. POLLOCK's estates, near Ballinasloe, embrace an area of about 30,000 acres, and were purchased in 1853 by Mr. Pollock for the sum of £250,000. In addition to that sum, Mr. Pollock, for the purpose of getting his contemplated improvements properly executed, paid large sums to the small tenants to go out, although they had no legal claim against him; which, together with the large outlays on improvement, amounted to £350,000, making in all, for purchase, buying out tenants, and improvements, £600,000. The estates, when purchased by Mr. Pollock, were in the most neglected condition. Land almost valueless from stagnant water, gapped fences occupying about one-fifth of the total area, crops scarcely worth the labour that produced them, poor tenants and tumble-down cottages, characterised this estate. On the Lismany estate improvements of the most extensive scale have been carried out. Old fences have been removed, the land has been divided by stone-built and lime-pointed walls into rectangular fields of 50 acres each, homesteads conveniently placed for the economical cultivation of the land attached have been erected in the most substantial manner; new farm roads have been made, and every reclaimable acre, by draining, liming, and boning, has been made available. The estate is not only remarkable for the magnitude of the improvements, but also for the efficient manner in which every operation has been executed. Drainage is so perfect that water-grasses and rushes have been supplanted by the most nutritive grasses. A large area, naturally too soft for cereal culivation, has been laid down to grass in the most perfect state; and, from the number of cattle and sheep fattened, and the liberal use of artificial foods and manures, the land is in the highest condition. The grass area carries a great number of stock, the cereal crops are bulky and productive, and the root crops are unequalled in the richest soils in England. One field, containing 50 acres, on the home farm, was last year under Swedes, and the crop was the largest I ever saw. The yield per acre would not be short of 35 tons. This field, when the estate was purchased, was let at 8s. per acre—it is now worth 36s. Altogether these estates for efficient culture are not surpassed by any estates in Great Britain. Their magnificent homesteads, richly manured lands, weedless fields, finely pulverised fallows, and pastures teeming with flocks, indicate the most perfect system of agriculture. I need scarcely add that improvements so perfectly executed could not fail in proving remunerative to Mr. Pollock. The home farm, embracing an area of 4000 acres, yielded last year—after charging interest on the farming capital—a net profit of £2098. In the twelve months ending November 1, 1869, Mr. Pollock sold 1941 head of cattle, 6358 sheep, and had 385 acres of green crops, 296 acres of oats, and 346 acres of wheat. Mr. Pollock's system of farming has been called an exotic; but it is an exotic in the same sense as civilisation is an exotic in the midst of barbarism, or a fruitful field in a barren waste. Were all the land in Ireland improved in a similar manner to Mr. Pollock's Lismany estate, it would yield one-half more produce than it now yields, and, during the next 20 years, give employment to double the number of labourers now employed.—*Saunderson on the Land Question.*

ARCHÆOLOGY AND ART IN ROME.

A pretty *fête* was given here last month in the form of a reception by four American artists, Messrs. F. Crownieshield, Charles C. Coleman, Geo. H. Yewell, and Elihu Vedder. Purely artistic in its character, it was as novel as it was pleasing; and amongst the hundreds who were present the feeling was general that there had not been a more interesting *soirée* during the season. The rooms of Mr. Vedder, which were fitted up for the occasion, were hung with clever paintings by himself and his brother artists. Refreshments were served in an outer room, and amidst the merry gossip two men dressed as troubadours ascended to an elevated seat and played at intervals on mandolins. Slight though the music was, it was executed with great precision and taste, and delighted all by its admirable harmony with the character of the entertainment. Such receptions are by no means uncommon in New York, I am told, and are well attended; and it is to be hoped that this *fête* may be indicative of an intention to introduce this agreeable exotic into Rome. The Germans, who are an eminently social people, have their Saturday evenings to which ladies are invited, and one or two grand affairs during the season; but none of these meetings are artistic; indeed our American cousins have the merit of being the first to unite Art with social enjoyment, and it is to be hoped that the successful effort of last week may be the first of many others. Perhaps our English artists, who are not inferior to those of other nations either in numbers or talent, may be induced to follow so good an example. At present there is no apparent bond of union between them, and so it happened that men of merit, Mr. Coleman, for instance, having no opportunity of making themselves known, pass their lives in the shade. The result of pleasant artistic *soirées* would be that an acquaintance would be formed between our artists and our numerous winter visitors, to the great advantage of both, whilst many a struggling son of genius, were he known through his works, would be saved from what I have witnessed more than once—a hard and unsuccessful battle with fortune. It is with the strong hope that something of the kind may be attempted another year that I have brought to your notice the pleasant American reception. Every one who comes here either dabbles in or prattles about Art; and pity is it that where so many of our countrymen can give pleasure, and so many are disposed to receive it, we do not have, during the season, at least two or three artistic receptions.

Last week an important excavation was made at the Emporium on the banks of the Tiber, when a large number of blocks of antique marble were brought to light. Amongst them was a column of antique yellow marble, of 860 cube palms; also two blocks of the same marble, of 22 cube palms; and a block of African, of 272 cube palms. The yellow marble is valued at from 15 to 20 francs a cube palm. The Emporium, as you know, is the old commercial landing-place of Rome, and here it is that within the last few years a whole treasury of marbles has been found. They are not permitted to be sold, his Holiness presenting them to ecclesiastical edifices in Rome, or elsewhere; some, it is said, having been sent off to Cologne for the decoration of the magnificent cathedral of that city. Pius the Ninth arrived unexpectedly towards the end of the excavation. The discoveries, too, which are being made at Ostia command attention. On a recent occasion forty-six bronze statuettes, 30 centimètres in height, were turned up; two gold rings, weighing each 40 grammes, one with a medallion, a coin of one of the Gordians, the other with a large serpent, also a gilt marble bust. These excavations are being made near the Museum, or not far from what may be called the old Castle. Parties are continually running down to visit the attractions of the place. Last week the British Archæological Society visited Ostia—and ladies I have met with who, in poking among the *débris*, have found coins massed together—why not rings, or other precious works of Art?

Lord Bute is known in England principally from the fact of his having joined the Roman Catholic Church; I must now introduce him as a patron of Art, and under circumstances which do great credit to his kindly feelings. Four or five years have elapsed since a brief notice was published in the *Athenæum* of Miss Lewis, a lady of colour, who had settled in Rome as a sculptress. She has struggled against many difficulties, and this season has been a bad one for Art, and the poor lady has suffered from the want of patronage. Her history was mentioned to Lord Bute by some benevolent friends, and he paid her a visit, which resulted in the purchase of a statue of the Madonna and the Bambino for £300.

Mr. Warrington Wood, the sculptor, has been more fortunate this year than many of his clever competitors. I have already informed you that the Empress of Austria sent for him before she left Rome, and more recently he has had the honour of dining with the ex-King and Queen of Naples, for whom he has executed and cast in bronze the head of a stag-hound.—H. W. in *Athenæum*.

STREET ARCHITECTURE.

MESSRS. RATHBORNE AND CO.'S NEW CIGAR DIVAN, GRAFTON-STREET.

The buildings which have been in course of erection at 42, Grafton-street, for the last eight months, are now completed. They cover a considerable extent of ground, running back from Grafton-street about 145 feet. A portion of these premises, including the whole of the ground and basement storeys having been taken on lease by Messrs. Rathborne and Co., who opened their handsome establishment on Easter Monday.

The main feature of the new concern is a fine suite of detached billiard-rooms, designed to meet the requirements of many lovers of the game, who, unable to incur the expense of a private table, and disliking the associations connected with many of the public ones, are thereby debarred from the enjoyment of a favorite pastime.

The elevation towards Grafton-street is composed of Kilmarnock white brick, with moulded red brick dressings, stone being sparingly used and only in situations where it was deemed indispensable. The front is the result of an endeavour to produce an architectural composition with cheap and simple materials, in harmony with all the requirements of the case. No sham construction has been used throughout, and the work is of a nature that will improve rather than deteriorate with the action of time.

There is an entrance on each side of the shop window—one giving access to fine warerooms and offices on the first floor, the other leading to the shop. The last-named apartment is furnished with handsome fittings in polished pitch pine and mahogany; and the floor, as well as that of the hall, is laid with encaustic tiling of rich pattern.

Passing from the shop through an enriched arched doorway we enter the smoking saloon, an apartment provided with every comfort for the votaries of the fragrant weed. A refreshment bar, with glazed partition, is situated on one side of this room, and is connected with stairs leading to the wine cellars, &c., in the basement.

A passage from the saloon leads direct to the billiard-rooms. These apartments, three in number, are very spacious, and are admirably lighted and ventilated. They are provided with metal tables of Harris' best manufacture; and cushioned seats are ranged round the walls, and raised on a platform to afford a good view of the game. In connection with these rooms are lavatories, with hot and cold water laid on, and every other convenience.

The upper portion of the main building is designed as a dwelling-house, the first floor, as has been mentioned, being laid out in warerooms and offices, all of which are roomy and well lighted.

The works have been carried out from the designs and under the superintendence of Mr. W. M. Mitchell, architect, of Suffolk-street. The contract has been executed in a creditable manner by Mr. S. Robinson, of Westland-row.

EXPLORATIONS IN THE SHANDON LIMESTONE, DUNGARVAN.

At the meeting of the Cork Cuvierian and Archæological Society held on the 13th ult., an account of researches made by Professor Harkness and Dr. Adams in the caves at Shandon, near Dungarvan, was given by the first-named gentleman. In the course of his remarks Professor Harkness, said—With the exception of the bones of the Irish elk, the remains of *pleistocene* mammals are by no means common in Ireland. Of the mammoth (*elephas primogenuis*) there are only three instances on record of its discovery in this country. The first of these was in 1715, when the teeth and bones of this animal were met with at Maghera, near Belturbet, in the Co. Cavan. The second is recorded in Smith's "History of Waterford" (1746), where allusion is made to an elephant's rib discovered at Whitechurch, near Dungarvan; and the last is a valuable discovery of the occurrence of these remains in a lime quarry at Shandon, near Dungarvan, by Mr. Brenan. Here other extinct mammal remains have been also found, associated with those of the mammoth. The locality near Dungarvan which affords these remains has ceased to be worked for some years, and of late, consequently, nothing has been obtained from the spot. Remains of extinct mammals are, however, by no means uncommon at Shandon, as will be seen in the sequel. The position in which the bones of the mammoth have been found here is somewhat unique. The workmen who first discovered them all bear the same testimony, that they were derived from the solid rock. Although this is to some extent the case, the statement is calculated to mislead, since it is not in the body of the limestone rock in which they occur, but in a hard breccia of a comparatively recent origin. The limestones near Shandon are very cavernous, and in many cases the roofs of ancient caves have fallen in and covered up their former floors. It is in a breccia derived from these fallen fragments that the bones of the mammoth and other extinct animals are found, and in this breccia bones seem to be very abundant. In an area of about a square yard we obtained five elephantine vertebræ and fragments of ribs, which formed portions of an equal number of these members of the skeleton, besides portions of the leg-bones of the reindeer. These bones were met with at the depth of about four inches below the floor of a small cave, embedded in breccia about two feet in thickness, and resting upon a mass of stalagmite about eighteen inches in depth. Beneath this stalagmite was another cave, which, however, was so blocked up with large masses of rock that an entrance could not be made into it. The investigation into the breccia, which was consolidated by the infiltration of carbonate of lime, was attended with great difficulties, the cave above it not being more than about two feet in height. The hardness of the breccia was also very great, and consequently our labours were confined to an extremely limited area. Had it been otherwise, many important results besides those we attained might never have been arrived at, and the remains of animals new to the *Pleistocene* farmer of Ireland would probably never have been discovered.

DANIEL MACLISE, R.A.

Mr. Daniel Maclise, the Royal Academician, died on Monday afternoon. Though this singularly gifted painter had lived for nearly three-score years, the marks of age had scarcely settled on him, and his vigour of hand will be attested in the great work which he has but just lived to complete, and which has been sent to the Royal Academy for the forthcoming exhibition. The cause of his death, as would be naturally surmised from its suddenness, was that terrible heart-disease which, in an era of rapid and intense work, would seem to be the penalty of laborious success. Mr. Maclise was a national painter, in every sense of the word, inasmuch as each of the three countries forming the United Kingdom may claim a part in him. He was born in Cork on the 25th of January, 1811; but he was of a Scottish family, his father having held a commission in the Elgin Fencibles; and his passion for art led him at an early period of his career to abandon the labours of a counting-house in his native city for the congenial student-life which he first sought in London, and subsequently in Paris. Maclise's first exhibited pictures had been painted in his twenty-second year, and they were shown at the British Institution in 1838, the subjects being "Mokanna Unveiling his Features to Zelica," "All-hallow Eve," and "A Love Adventure of Francis the First with Diana of Poictiers." In 1835, the Royal Academy elected him an associate, on the strength of a picture which was entirely unworthy his powers, and which was shortly followed by works immeasurably beyond it in every kind of merit. "Robin Hood and Richard Cœur de Lion," "Salvator Rosa painting Masaniello," and "Merry Christmas in the Baron's Hall," were amongst the most prominent of his pictures at this time; and in 1840 came the "Banquet Scene in Macbeth," a theatrical, but none the less imaginative and artistic work. The same year saw his "Gil Blas Dressed *en Cavalier*," "Scene from 'Twelfth Night,'" and "Sleeping Beauty." In 1841 Mr. Maclise was elected a Royal Academician, his age then being thirty—not a very advanced time of life for a painter. We must pass over scores of well-known works, to speak of services which Mr. Maclise has done the State in other capacities than those of a limner. In 1855 he travelled over Italy in search of fresco works; and as one of the Fine Art jurors of the Paris Exhibition he worthily represented the artistic judgment of his nation. His fresco paintings in the Palace of the Legislature are among his most conscientious labours. When, in 1866, Sir Edwin Landseer refused the Presidency of the Royal Academy, it was offered to Maclise, who declined it in turn. Though he may be said to have enforced in his own person the respect due to his art, he was one of the most unassuming men who ever lived.

ANALYSES BY DR. E. REYNOLDS AT THE ROYAL DUBLIN SOCIETY.

The following report from Dr. Emerson Reynolds, Analyst to the Royal Dublin Society, was read at a council meeting on the 14th ult., and ordered to be printed and circulated:—

My Lords and Gentlemen,—I beg to report that, during the year ending the 31st March, 1870, 109 analyses (exclusive of "opinions") have been performed in this laboratory, for members of the Royal Dublin Society, and for the public. The following tabular statement contains a return of the analyses made, grouped under the several heads:—

Analysis of Manures, Feeding Cakes, &c	40
„ Metallic Ores and Minerals	11
„ Water	23
„ Technical Products	27
„ Wine, Flour, &c.	8
Total,	109

In former reports, I have taken the opportunity of calling attention to the large and steady increase, of late years, of the practice of adulterating artificial manures of all kinds. I regret to have to report that the experience of the past year has shown me that this pernicious custom is widely extending, and to add that a very considerable proportion of the manures analysed by me during the past twelve months have been proved to be more or less adulterated.

As illustrating the composition of some of the manures sold to farmers as being pure and rich in fertilizing constituents, I may cite some analyses of typical samples, selected from amongst those recently examined in your laboratory.

In attaching a money value to the several samples referred to below, it is necessary to guard against the impression that such an estimate represents the precise worth of the manure as an article of commerce. In point of fact, the money value per ton, assigned by the chemist to a given sample after analysis, is, on the whole, considerably in excess of the actual cost of the substance examined.

A rich guano was found to contain, in 100 parts—

Moisture	7 26
[*] Organic and Volatile Matter	37·31
Alkaline Salts	5·02
Phosphate of Lime and Magnesia	9 35
Carbonate of Lime	4·60
Sulphate of Lime	31·60
Sand, Clay, &c.	4 86
	100·00

This substance proved to be adulterated with nearly one third of its weight of an impure form of gypsum, or hydrated sulphate of lime. If this substance had not been present, the value of the guano would have reached £8 8s. 4d. per ton.

As an example of a vitriolized guano, I may give the following analysis of a remarkable specimen:—100 parts contained—

Moisture	12·86
[†] Organic and Volatile Matter	38·27
Clay and Siliceous Matter	22·00
Alkaline Salts	4·16
Soluble Phosphate of Lime	2·55
Insoluble Phosphate of Lime	14·04
Sulphate of Lime	6·12
	100·00

Not only was the per centage of the soluble or biphosphate of lime in this sample extremely low, but it contained rather more than one fifth of its weight of worthless red clay. If this addition had not been made to the manure, the money value of the residue would have been £10 15s. per ton.

At times, however, unscrupulous traders overreach themselves, and this more especially in tampering with the so-called superphosphate of lime. A sample of manure of this class was found, on analysis, to contain in 100 parts the following:—

Moisture	17·20
[‡] Organic and Volatile Matter	16·15
Insoluble Phosphate of Lime	40·93
Carbonate of Lime	5·21
Sulphate of Lime Chloride of Calcium	15·29
Alkaline Salts	3·05
Siliceous Matter	2·17
	100· 0

A careful examination of this manure showed that the manufacturer had employed in its preparation a good sample of superphosphate of lime, containing a fair proportion of soluble phosphate. Wishing to adulterate, and no doubt also desiring to "dry" the manure, a quantity of carbonate of lime, probably in the form of chalk, was added to this sample, which addition not only increased the weight of the bulk, but had the effect of completely reducing the previously soluble phosphate of lime to the insoluble condition This second office of the chalk the manufacturer, no doubt, did not calculate upon, else he would not have gone to the expense of employing a genuine superphosphate in the first instance.

Even soot does not escape gross sophistication; for within the last few days I have analyzed a sample, with the following very unsatisfactory results:—100 parts contained—

Moisture	14·75
Soot (Carbon and Volatile Matter)	24·55
Clay	60·70
	100 00

The foregoing analyses are sufficient to indicate the kind of adulteration most commonly practised by manure manufacturers, or by their agents, in this country.

I may and that the laboratory of the society is in excellent working order. Several of the old and useless furnaces have been removed, and in some cases their places supplied by new brick furnaces, or by gas-heating apparatus, more suitable than were the older forms of apparatus for use in the investigations required for your Mineral department.

I have the honour to be, my lords and gentlemen,
your obedient servant,
J. Emerson Reynolds.

Royal Laboratory, Royal Dublin Society,
April 14th, 1870.

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[*] Affording 6·42 of ammonia. Money value, £6 6s. 3d. per ton.

[†] Affording 8 15 of ammonia. Money value, £8 12s. 6d. per ton.

[‡] Ammonia, ·31. Money value, £4 4s per ton.

THE VAUDEVILLE THEATRE, LONDON.

The latest addition to the list of London theatres was opened on the same night as the Drury-lane opera. The architect of the theatre is Mr. C. J. Phipps, whose experience in this particular branch of his profession ought by this time to be unusually great. The position and space he had to deal with have evidently been difficulties in his way; but he has for the most part got over them very creditably. The extreme narrowness of the house gives it unavoidably something of a pinched appearance, but the space at command has been well economised, and a good view of the stage is obtained from nearly every seat in the house. It is in the size of the seats that a certain amount of crowding (doubtless unavoidable) is most felt, some of the balcony stalls being so near to those in front of them that the room available for the legs of a man of even average height is decidedly limited. The plan of the house is good. The semicircle of the balcony "opening out to the columns of the proscenium by curves of contrary flexure" (to quote Mr. Phipps' favorite expression) is unobjectionable, coming, as it does, against the straight lines which he has happily given to his proscenium boxes. These are three in number on each side, and form an important feature in the architectural treatment of the auditorium. The large amount of space above the proscenium is somewhat of an eyesore, but it is almost a necessity, in some form or other, of the general planning of the interior.

Passing to the decorations, we find no mention of their author in the programme, but we believe we are right in stating that they are the work of Mr. George Gordon, the scenic artist of the Gaiety Theatre, to whom is also due the act-drop of the Vaudeville. Unquestionably the decorations bear strong evidence of the scene-painter's hand. They have been stated by some of our contemporaries to be in the Romanesque style, but we should rather say they were in the "Gaiety" style. They bear, in point of fact, the strongest family likeness to those of the Gaiety Restaurant; and we might almost repeat the very criticism that we passed upon these latter last November, in utter ignorance of their authorship. Mr. Phipps has in a manner constituted himself a champion of coloured decoration in theatres, and for this a debt of gratitude is due from those who admire polychromatic effect; but in so doing he lays himself open to severer criticism than others. We are bound to state our conviction that the decoration of the Vaudeville Theatre is not successful. It is not for us to enter into the question as to whether Mr. Phipps or Mr. Gordon has been the source of inspiration, but we find, in a greater or less degree, the same faults that characterise the Gaiety Theatre and Restaurant. The principal of these are want of repose, and the absence of a sense of harmony in colour. In entering the Vaudeville Theatre after leaving Drury-lane opera these defects were more peculiarly striking. At the one house an unbroken sweep of amber, gold, white, and blue upon a base of crimson; at the other, no two things of the same colour. Mr. Phipps seems, since his connection with the Gaiety, to have imbibed some of the spirit of its predecessor, the Strand Music Hall, a result to be deplored, considering the opportunities afforded to him.

Passing a little more into detail, we may notice that the treatment of the ceiling is good. It consists of radiating compartments, filled with white ornaments upon a rich light blue ground. The same tone of blue, a trifle darker, is repeated below in a kind of frieze, which is continued right round the house, and so forms the gallery front. But the strength of colour practicable upon a ceiling with a sun light is by no means compatible with the direct light falling upon a vertical surface, and the effect of the blue in this position is, in consequence, unpleasantly garish, although the ornament is well drawn and otherwise effective. The large coved space above the proscenium is divided out into a number of rectangular panels, filled with ornaments of alternating design. There is much that is good about this portion of the work, though there is some of the restlessness of which we have spoken, and which is due in a great degree to the spotty character of the designs, and to injudicious use of the gold. The spaces contiguous on each side and above the proscenium boxes are treated in a manner altogether different, and very unsatisfactory. The ornaments are bad both in conception and drawing, and are the worst piece of decoration in the theatre. We are the more surprised at this, as the treatment of the balcony front (evidently by the same hand) is particularly good, and by far the most artistic in the building. Oblong panels, containing arabesques upon gold grounds, alternate with circles of Marone, bearing devices in a light tone of colour, and the whole effect is quiet, rich, and soft. Were the whole theatre treated in the same key of colour, we should have had little but congratulation to offer.

An important feature of the decorations are the six figure-subjects from the "Tempest" and the "Midsummer Night's Dream," in lunuttes above proscenium boxes. These paintings are the work of Mr. W. Phillips, and are excellent in intention and in the method of treatment adopted, but further praise we cannot give them, both the drawing and the execution being very inferior. The act drop consists of a charming classical landscape, surrounded by arabesque borders, and so far reflects the highest credit on Mr. George Gordon's taste and skill as a scenic artist. But what could have induced him to make the marginal curtains of that bilious-coloured canary yellow, and who is responsible for the contiguous draperies of the private boxes? These boxes are lined with a crimson and gold paper, so treated as to produce at a little distance a most agreeable tone of warm brown. Had this been continued through the house, instead of a common crimson paper in the boxes and pit, with green paint in the balcony, cutting the house in half, the effect would have been harmonious and pleasant. But the curtains and valances are of a deep orange tone—a colour unpleasing in itself, in discord with everything else in the house, and especially so with the canary-colored draperies of the act drop. When we add that the orange valances are trimmed with a fringe consisting of yellow, blue, and red, our readers may be left to imagine the result. But we have yet a greater sin to denounce. The proscenium curtain is of the brightest possible blue consistent with its depth of colour. We have thus the over-bright turquoise blue of the gallery front and frieze, the neutral blue background of the figure subjects, and this mass of what we may term the drapers' fashionable blue! The use of blue in decoration is proverbially a matter of extreme difficulty, but we have seldom witnessed so unwise an experiment, or winced under so painful a failure.—*Building News.*

COFFEE AS A DISINFECTANT.

Few persons are aware that coffee is a valuable disinfectant. Experiments, however, have proved that it is the most powerful means, not only of rendering animal and vegetable effluvia innocuous, but of actually destroying them. A room in which meat in an advanced degree of decomposition had been kept for some time, was instantly deprived of all smell on an open coffee-roaster being carried through it containing a pound of coffee newly roasted. In another room, exposed to the effluvium occasioned by the clearing of a manure pit, so that sulphuretted hydrogen and ammonia in great quantities could be chemically detected, the stench was completely removed in half a minute, on the employment of three ounces of fresh-roasted coffee, whilst the other parts of the house were permanently cleared of the same smell by being simply traversed with the coffee-roaster, although the cleansing of the pit continued for several hours after. The best mode of using the coffee as an disinfectant is to dry the raw bean, pound it in a mortar, and then roast the powder on a moderately heated iron plate, until it assumes a dark brown tint, when it is fit for use. Then sprinkle it in sinks or cesspools, or lay it on a plate in the room which you wish to have purified. Coffee-acid or coffee-oil acts more readily in minute quantities.—*Midland News.*

ACCIDENTS.

On Friday last a man named Corbett, aged 23 years, lost his life by the falling in of an embankment at the foundations of a house at Queen's Park, Monkstown. After the lapse of an hour the body was dug out, life being quite extinct.

A man named Christopher Weldon met his death by accidentally falling from the fourth storey in the mill of Mr. Smith, Merchant's-quay, Drogheda, on the 18th ult. It appeared the traps of the hoisting shoot had been all left open, and the deceased slipped though them.

CORRESPONDENCE.

THE IMPROVEMENTS AT TRINITY COLLEGE.

TO THE EDITOR OF THE IRISH BUILDER.

Sir,—On Saturday last the *Irish Times* contained an article reflecting upon the Corporation for an alleged delay in carrying out the improvements in front of Trinity College. Being under the impression that this letter was written in ignorance of facts, I was directed to write to the editor informing him of the mistake, and giving him the facts as they really stood. I accordingly wrote the accompanying letter, and had it delivered at the office of the paper on Saturday last; but, as it has not appeared in that journal, I take the liberty of asking you to publish it for public information.

Wm. J. Henry, Town Clerk.

TO THE EDITOR OF THE IRISH TIMES.

Sir,—The *Irish Times* of this date contains an article in reference to an alleged delay in carrying out the improvements in front of Trinity College and College-street by widening the street and substituting ornamental railings for the present dead wall. The attention of Committee No. 3 of the Corporation having been called to this article, they have directed me to inform you that everything has been done on their part to expedite the carrying out of this desirable improvement to the city, as will appear from the following facts:—Upon the 24th of December, 1869, a letter was received by me from Dr. Toleken, Registrar to the Board of Trinity College containing a proposition for the consideration of the Council, offering to co-operate with them in carrying out the proposed improvements. On the 1st day of January following, being the earliest day after the Christmas holidays, I summoned the special committee having charge of this matter to meet, which they did upon the 4th of January, and had a conference with the City Architect and the architect to the College, who submitted his plans and estimates, &c. The committee then directed their law agent to report forthwith upon the financial and legal questions involved The law agent, Mr. Smyth, made his report accordingly upon the 7th January; and the committee, after consideration of Mr. Smyth's report on the 8th January, drew up their report to the Council, recommending the adoption of the proposition contained in Dr. Toleken's letter of the 24th of December. At the next meeting of the Council, held upon the 17th January, the report of the committee was brought up for first reading, and so anxious were the Council to deal with the matter at once, that the standing orders were suspended and the report adopted. The Corporation being desirous to obtain as much space as possible for the accommodation of the public at the corner of Grafton-street, it became necessary to have an interview with the Board of Trinity College and to communicate with the neighbouring banks and public institutions. This occasioned some delay, on account of some of the boards of these institutions being resident in London. Upon the 7th of March the Council again met, and it having been reported to them that all details were agreed upon, it was finally resolved that the work should be gone on with, the standing orders having been again suspended for the purpose of expedition. The committee met in the afternoon of the same day, and instructed their law agent to put himself in immediate communication with the law agents of Trinity College and the Bank of Ireland, in order to have the necessary deeds prepared for execution. These legal gentlemen have been since engaged in the preparation of the deeds and the necessary maps, which are now ready for execution. I may add that the works have been actually commenced by the contractors, who are, I am informed, bound to complete the work before the 1st day of September next. Hoping that in justice to the Corporation you will give an early insertion in your journal,

Wm. J. Henry, Town Clerk.

[We understand that the contract for the stone-work has been taken by Mr. John Nolan, of Meredyth-place; the iron-work by Mr. Turner, Hammersmith Iron Works.]

COMPETITION.

Designs for a block of six new dwelling-houses on grounds opposite and belonging to the Wesleyan College, Belfast, were sent in on the 27th April. We believe there are a large number of competitors, chiefly from Belfast. The cost is to be about £800 for each house.

NOTES OF WORKS.

The ceremony of laying the first stone of the new Harbour Boat Club-house at Kingstown was performed on the 20th ult. by the Earl of Longford. The site (granted by the Harbour Commissioners at a nominal rent) is between the Carlisle and East piers, and is most convenient and suitable for such a purpose. The plans are by Mr. William Stirling, architect, Great Brunswick-street. Mr. J. Cunningham, Dalkey, has commenced the first section of the contract at £600.

A Presbyterian church has been commenced at Carlingford, Co. Louth. It it being built on a plot of ground facing the main street, and adjoining the Court-house. The material to be used is dark limestone, with quoins and dressings of Newry granite. Mr. Thomas Browne, of Carlingford, is the contractor.

The foundation-stone of a new Methodist church at Dromore was laid on the 28th ult. It is to be erected on the site of the old building. The architect is Mr. William Gray, Belfast; the builder is Mr. Adam George, of Holywood. The cost will be about £800.

The new church of Castlemacadam, Vale of Ovoca, County Wicklow, has been consecrated by the Archbishop of Dublin. It is a neat Gothic structure, erected on a site comprising about two acres, in close proximity to the old church. Messrs. Lanyon, Lynn and Lanyon were the architects, and the contract was creditably carried out by Messrs. Gahan and Sons, Harcourt-street. A fine bell, presented by Lambert Bayly, Esq., bears the following motto:—"The voice of one crying in the wilderness."

A theatre is proposed to be erected at Kingstown. A site near the railway terminus has been advertised for. The names of the parties interested in the movement have not been announced.

The foundation-stone of the Sailors' Home and Reading-room, proposed to be erected at Kingstown, will be laid on the 4th inst.

The new church of All Saints, Newtown Park, Blackrock, was consecrated on the 21st ult. by the Archbishop of Dublin. It is in the Early English style. The material used was granite, with dressings of sandstone. Mr. John M'Curdy, C.E., was the architect; Messrs. Beckett, of South King-street, the builders. The lighting and heating were carried out by Messrs. Edmundson and Co. The total cost was over £3,000.

A new Catholic church is about to be built at Ballycastle for the Rev. P. M'Alister, from designs by Rev. J. R. M'Auley, C.C., Cushendall.

The building works at the new Catholic Cemetery, Falls-road, Belfast, for the Right Rev. Dr. Dorrian, are being commenced. Mr. T. Hevey, Linenhall-street, Belfast, architect; Messrs. J. and J. Guiler, builders, Belfast.

LAW.

A VAGUE CONTRACT.

COLERAINE QUARTER SESSIONS.

James Stevens v. *Henry Anderson*.—This was an action for £28 3s. for work and labour performed for defendant, in building a bridge across Rhee River, on the estate of the Worshipful Company of Ironmongers, for whom Mr. Anderson, J.P., is agent.

Mr. Carson appeared for plaintiff, and Mr. Leech for defendant.

Plaintiff stated that the bridge had been built according to a plan and specification [produced], and that the demand in the process was for the cost of the original contract, and extras occasioned by the nature of the foundations, which were of an *unexpected* description.

His worship, having heard the defences (viz.—that the work was not completed; that the alleged extras were included in the original contract; and that payment depended upon the completion of the work), read the terms of the contract, from which it appeared that plaintiff had agreed to build the bridge according "to directions given as the work proceeded." His worship said anything more nonsensical he could not conceive, as the contractor might, under the agreement, be compelled to build a bridge value for £1,000, under the contract for £35.

Mr. Anderson—The plaintiff drew the contract himself.

Mr. Carson—Will your worship hear my construction of the contract? You would not surely hold that he could be compelled to make a suspension bridge?

His worship—If you construe anything but nonsense out of it, you will beat me. It is a case for reference; and if you consent to adopt my suggestion I would recommend the county surveyor.

Mr. Carson objected, and suggested that the whole matter should be referred to Mr. John Harvey, land surveyor.

Mr. Anderson objected; and after some consideration,

His worship, with the consent of the parties, referred the case to John Brown, Esq., C.E., Engineer of the Bann Navigation Improvement, who is to inspect the works, examine the contract, specification, and drawings, and report in writing at next sessions, his fee to be paid as the court directs; Mr. Anderson in the meantime to have a tracing of the map made, and to give the plaintiff liberty to inspect the original at all reasonable times.

MISCELLANEOUS.

Mr. B. Williamson, F.T.C.D., is preparing a large treatise on Mechanics, which will shortly issue from the University Press.

A Painting Contract.—The following is given by a southern "daily" amongst the proceedings of a body of town commissioners:—"A proposal was read from Mr. L. Freeman, to paint a new press in the office with four coats of paint grained in oak—top grained and varnished with the best oak varnish; to paint rails and portion of stairs in oak, same as press, to be finished with the best material for the sum of fourteen shillings—Accepted."

South Kensington.—The Hall of Arts and Sciences is fast approaching completion. The objects of the hall are as follow:—First, national and international exhibitions of works of art and industry, including industrial exhibitions by the working classes, similar to those which have recently been held with such success in various parts of London; next, for the exhibition of pictures and works of art; the distribution of prizes by public bodies for agricultural and horticultural exhibitions; for performances of music, &c. Under this "*et cetera*" are, it is to be presumed, included the two rather wide clauses in the royal charter of incorporation which allow the hall to be used for any purpose connected with science and art, and for congresses, both national and international, having the same object. In regard to the musical performances which are intended, some doubts have been expressed by Mr. Boucicault and others as to the acoustic properties of the building, and its adaptability to the purpose of anything like solo vocal performances. Sir Charles Wheatstone and Professor Tyndall, on the other hand, have stated that they see no reason why the whole structure should not be perfectly resonant throughout and a good conductor of sound. This, however, has to be proved in practice. The hall may be called generally in its plan a sort of miniature colosseum. It is elliptical in shape, 270 ft. long by 230 ft. wide, and 135 ft. high. Externally it will be in the Decorated Italian style, of red brick and terra-cotta—in fact, entirely of what may be called the South Kensingtonian style,—and so harmonise with the handsome museum buildings. The terra-cotta decorations have been freely used, but the aim has been to employ the material rather as brick than as an imitation of stone. This was always the practice in the first period of Italian terra-cotta work, and certainly secures a picturesque effect, though at some sacrifice of the rigid accuracy of architectural lines with which the English eye is so familiar. Internally the structure will be a vast oval-shaped amphitheatre. In the centre will be an arena capable of accommodating on moveable seats 1,000 persons. Above this, and sloping back from round it, will rise the stall seats, capable of seating 1,400. Above the stalls, with an interval of ornamental panel work, comes the grand tier of boxes, each box built for ten persons, though really having space enough to accommodate twice that number with ease. Every grand tier box has a retiring room behind it, which the proprietor can furnish in any way he pleases, and in which all sorts of refreshments, from lunch to dinner or supper, can be served. Above the grand tier rises the second tier of boxes, built for five persons each, and over these is the round tier called the balcony, which will seat 2,500 persons; and above all, what is named the gallery, though it is really a wide, lofty promenade, which is meant for 2,000 visitors. On the whole, then, there will be actual sitting accommodation—that is to say, with numbered and registered seats—for an audience of 8,000. The orchestra will hold 1,500 members of the chorus and 300 musicians; so that, roughly speaking, the whole building will seat with ease 10,000 persons. With such a population in the building, it may well be asked what are the means of getting them out of it, especially in a crisis of panic and alarm. This has been most carefully provided for. From the boxes there are wide exits, 8 ft. wide, at the rate of one for every 250 persons. From the other parts of the hall there is one exit of similar width to every 200 persons, so that it is calculated that the whole hall might be emptied of its vast audience in not more than three minutes, and this without crushing or confusion. The domed roof is of light wrought iron, with glass between the ribs. During the night it will be lighted by gas. The cost of the entire building is £200,000, and of this £112,000 has been subscribed by the purchase of seats. The grand tier boxes are £1,000 each, the second tier £500 each, and the stalls £100 each. These stalls and boxes are the personal property of the purchasers, and are to be held by them and their heirs for the term of 999 years—in fact are held in perpetuity. £50,000 is given towards the building by the Commissioners of 1851, on whose land the hall is built, at a ground rent of a shilling a year. Only £38,000, therefore, remains to be paid off all the charges of the work. A grand organ will be placed in the hall.

The New Coinage Act.—The new Coinage Act, which became law last month, is a much more important measure than at first appears. The public will now be placed in a position to compete with the Bank of England in delivering bullion to the Mint, and can demand that it shall be returned to them in coin at the rate of £3 17s. 10½d. per ounce,—no charge being made for coinage. Hitherto the practice has been to deliver bullion to the Bank, paying 1½d. per ounce to receive coin in exchange. The following are the clauses in the Act which bear out the above:—"Where any person brings to the Mint any gold bullion, such bullion shall be assayed and coined, and delivered out to such person without any charge for such assay or coining, or for waste in coinage; provided that 1. If the fineness of the whole of the bullion so brought to the Mint is such that it cannot be brought to the standard fineness under this Act, if the coin to be coined thereout, without refining some portion of it, the Master of the Mint may refuse to receive, assay or coin such bullion. 2. When the bullion so brought to the Mint is finer than the standard fineness under this Act of the coin to be coined thereout, there shall be delivered to the person bringing the same such additional amount of coin as is proportionate to such superior fineness. No undue preference shall be shown to any person under this section, and every person shall have priority according to the time at which he brought such bullion to the Mint."

The Health of Dublin.—In the Dublin registration district the births registered during the week ending April 23rd, amounted to 196. The average number in the corresponding week of the years 1864 to '69 inclusive, was 164. The deaths registered during the week were 146. The average number in the corresponding week of the previous six years was 154. Eleven deaths were caused by fever, viz., 7 by typhus, 3 by typhoid or enteric, and 1 by simple continued fever. Scarlet fever proved fatal in 3 instances, and 2 from measles. Bronchitis was the cause of 13 deaths, and 4 from pneumonia or inflammation of the lungs. Two deaths were caused by apoplexy, 4 deaths were caused by paralysis. Disease of the heart caused 5 deaths, and 2 from aneurism. Thirty deaths were referred to phthisis or pulmonary consumption. Four deaths from cancer were registered. Two deaths were the result of accidents. A female died at the advanced age of 95 years.

Captain Morgan's New Breach-Loader.—On Tuesday week Captain Morgan, R.A., read a paper at the Royal Artillery Institution, Woolwich, on the subject of a very heavy breach-loading gun of novel construction of his invention. He pointed out that the contemplated arming of ships with fifteen and even twenty inches of iron will necessitate much heavier guns than any yet manufactured, and referred to the many serious difficulties in the way of attaining this object by the ordinary means. Having described minutely the effects of the circumferential and longitudinal strains to which guns are subjected on being fired, and the various defects which he observed in the mode of constructing the service guns, Captain Morgan proceeded to explain his own design. He made his calculations for a 1200-pounder gun, weighing 70 tons, a large proportion of which would consist of a very heavy iron breach piece, fitting like a cork or piston into the bore, and retiring on a tramway at every discharge, and so to permit the gunners to reload. He entered fully into the details of the metal, mode of manufacture, rifling, cost, and other particulars, and was warmly applauded at the close of his reading. A discussion followed, in which Colonel W. J. Smythe, R. A. (chairman), Colonels Sharpe, Millar and Strange, Captains Browne, Noble, Harrison, and others took part, the principal objections being with respect to the disproportionate weight of the new gun, and the undesirability of moving in the matter until the necessity for such powerful artillery was really demonstrated. Captain Morgan, in reply, said they must be prepared to sacrifice something on the score of weight to get other advantages, which became more and more necessary as armour-plating became developed.

Sale of Wood Goods at Newry.—On Thursday last the periodical timber sale of the Newry Saw Mills Company was held on their spacious premises, Butter Crane-quay. Although not the most favourable portion of the year for commercial speculations, we were gratified to perceive that the attendance of buyers—the leading men of the trade—was unusually large, and that the business transacted was fully in proportion to the numbers assembled. The ample and substantial *dejeuner* having been done full justice to, business commenced at a quarter to one o'clock, and closed at half-past four. From the list of prices before us we quote the following:—St. John's bright spruce deals, £11 17s. 6d. to £12 10s. per 120, 12 x 9 x 3; battens, £8 7s. 6d. to £10 per 120, 12 x 7 x 3; Redwica deals, £10 12s. 6d. per 120, 12 x 9 x 3; red and white flooring, 9s. to 10s. 9d per square; pitch pine timber, 14¾d. to 16d. per cubic foot; yellow pine, 15½d. to 18d. per cubic foot; Waney board pine, 18½d. to 21¾d. per foot; red pine, 15¾d. to 17d. per foot. The sale was conducted by Mr. Joseph Loughran, of this town.—*Telegraph.*

Modern Customs.—Presentations and Testimonials are largely on the increase; this modern custom appears to extend to almost every household, for no auspicious event is allowed to pass without its being marked by some pleasing souvenir; Birthdays, Christenings, Marriages, the seasons of the year, such as Christmas, New Year, &c., invariably receive special commemoration. The attention of one of the great London Manufacturers, Mr. J. W. Benson, of 25, Old Bond Street, and of the City Steam Factory, Ludgate Hill, has been directed to this subject. With the view of giving more artistic effect to this custom of society, he has published a most interesting Illustrated Historical Pamphlet upon Watches and Clocks, also one upon artistic Gold Jewellery, Silver and Electro plate; all are profusely illustrated with choice designs, and are sent post free for 2d. each, thus bringing within the reach of those who live even thousands of miles away from London, one of the largest and most artistic collections which can be seen in any part of the world; and, if necessary, designs are prepared to illustrate any special case.

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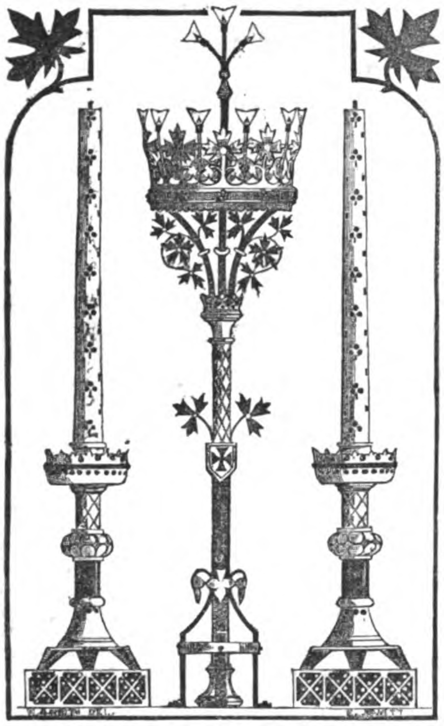

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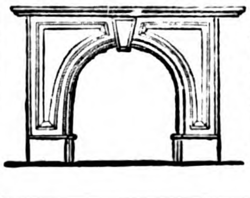

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The Irish Builder.

VOL. XII.—No. 250.

The Round Tower of St. Michael le Pole, Dublin.

ABOUT three months since Sir William R. Wilde read a most interesting paper before the Royal Institute of the Architects of Ireland, entitled "The Archæological Drawings and Notes of Gabriel Beranger, and Buildings in Ireland in 1760-80." The author embraced that favorable opportunity for making some remarks on the much-vexed question as to the origin and use of the Irish Round Towers, quoting from a journal kept by Beranger, who had sketched several of them that stood in his day. We are pleased to find that Sir William has extended and illustrated his very valuable and interesting paper, and published it (according to promise) in the "Journal of the Royal Historical and Archæological Association of Ireland"—or, as he appropriately and deservedly styles the journal alluded to, "that grand *repertoire* of Irish archæology." It is gratifying to find this association is making good progress—numbers are being added to its ranks at every quarterly meeting; it has our best wishes.

So much by way of introducing to our readers a portion of the paper referring to the round tower which formerly existed in our good city of Dublin :—

"It is believed that the ecclesiastical round towers are among the most ancient, as they are the most celebrated, monuments of Christian antiquity in Ireland. That some of them belong to the period of the first stone structures in which mortar or cement was used is undeniable. No perfect list, nor full description of these buildings, or the places in which such formerly existed, has yet been published. It is not generally known that a round tower stood in the city of Dublin within the last ninety-five years, and was only taken down in order to prevent accidents, after it had been severely shaken by the great storm of October, 1775. In the hollow beneath the ancient city walls, on the north-eastern space between the present Castle gardens and Chancery-lane, bounded on the north and west by Great and Little Ship or Sheep-streets, and extending up to Bride-street on the west, and St. Bridget's Church a little to the south, was the ancient parish of St. Michael's without the walls, to distinguish it from that within—which was attached to "the Cathedral of the Holy Trinity" or Christ Church. Its graveyard, in which interments took place so late as 1830, may still be seen adjoining to the parochial almshouse. This parish of St. Michael of Pole, and a part of St. Stephen's, were united to that of St. Bride's in 1682, by the Dean and Chapter of St. Patrick's, who styled themselves, in the minute of the 25th September in that year, "the parsons and undoubted patrons of those parishes." The old church was then taken down. Here, beside the millrace from the Poddle River which now runs under the gate of the Lower Castle Yard, stood the round tower of Dublin, within a couple of hundred yards of the old city wall, adjoining that gate. This locality was therefore one of the earliest Christian ecclesiastical sites, next to that of the Well of St. Patrick, within or in the neighbourhood of the metropolis. The tower must have been an ostensible object; yet, strange to say, scarcely anything has been said about it by our early civic historians, with the exception of Molyneux and Walter Harris, which latter author, in his edition of Ware, writes thus of it in 1762, when arguing for the early antiquity of mortared masonry in Ireland :—"Probably St. Michael's Church, in Sheep-street, with one of these round towers adjoining it, was built about the same time as Christ Church." This, however, is a plagiarism ; for thirty-seven years previously Molyneux, in his "Discourse concerning the Danish Mounts, Forts, and Towers in Ireland," published in 1725, when writing of the erection of Christ Church "by Sitricus, a Danish king, about the year 1038, as appears from ancient records still kept in that cathedral," says—"About the same time, I judge, St. Michael's Church, in Sheep-street, not far from Christ's Church, was likewise built by the Danes, with one of these round towers adjoining to it." It was called St. Michael le Pole, or dell Polla, or Michael of Pole, or of the Pool, on account of its vicinity to the "Pole Gate" in the old city wall, near St. Werburgh's Church. Harris, in his "History and Antiquities of the City of Dublin," describes the opening in the north-east city wall at Pole Gate, from a confluence of water in this hollow, which was often troublesome to passengers till a bridge was thrown over it. From the "Free Press" for the 15th August, 1778, we learn that "the ruins of the old Church of St. Michael of the Pool remained in the beginning of Queen Anne's reign. In 1706, Dr. Jones, an eminent Latin master in Ship-street, applied to the patrons of the parish and the incumbent for leave to rebuild the old walls, and convert the same into a schoolhouse ; which work, when obtaining their consent, he set about, and built a large and lofty schoolroom, with three small rooms at the end, and a flight of stairs in the tower leading to the two upper rooms." And in the same paper it is said that the "ruin" of this tower "was prevented about forty years ago by a lover of antiquities, who then applied to Dean Swift and other gentlemen for contribution, when it was scaffolded from the ground, and well pinned with lime and stone within and without, which thorough repairing ever since preserved it from falling." When the dean and chapter confirmed Dr. Jones in his possession of the church, they showed, says Mr. Monck Mason, "an anxiety which every antiquarian will think laudable," by placing the following note on their minutes :—"That Mr. Jones do not pull down the monument or tower of St. Michael of Paul's, near his shoolhouse ;" and again, on the 23rd of August of the same year, they issued an order to the same effect. A Mr. Evans succeeded Dr. Jones as master of St. Michael's School, "after whose promotion to a country living it lay waste for a few years, until it was put in order for the ingenious Dr. Dunkin, in 1738, who was succeeded by his usher, Dr. Ball, the present very worthy master," in 1778. . . . .

The following is the description of it given by Beranger :—"This tower was situated in a yard, at the rear of some houses on the west side of Great Ship-street, near the Castle ; it was reckoned one of the most ancient among those kind of structures, as its walls were not in a perpendicular line, but so ill constructed as if the builder had been ignorant of the use of the plumb-line ; it is encompassed by a building which was formerly a chappel, but was afterwards used as a schoolhouse ; in a great storm we had some years ago, it was so much damaged that, to prevent the accidents its fall might occasion, it was demolished, and this a few months after I had drawn it ; thus I saved it from oblivion."

After the storm of 1775, the tower "threatened ruin not only to the schoolhouse, but to the neighbouring houses in Chancery-lane, and the fall of it was every day expected. The dean and chapter referred the examination of this old edifice to one of the most skilful architects of this kingdom. He reported the evil complained of to be incurable, and that the tower could not be raised, for the attempt of fixing a scaffold about it would tumble it down." Shortly after the storm, possibly in November, "it was concluded to pull down the upper part of it, which was done accordingly, to the level of the schoolhouse roof, and all the damage done to the said roof and chimney were repaired," the stones being "applied to rebuilding a ruinous wall on the north and east side of the churchyard, and some part of the engine-house." The removal of the tower having caused much dissatisfaction in the parish, "an old inhabitant" wrote upon the subject to the committee for conducting the "Free Press," and from the controversy which ensued I have gleaned several of the foregoing particulars.

The schoolhouse is now "the Alms House of St. Bridget's parish, founded in the year 1683. Removed here A.D. j . . . 8 . . .," probably 1787, as shown by the inscription on a stone over the archway in Ship-street. The churchyard, with its two standing and several flat tombs, although now in a most miserable state of filth and decay, is exactly as represented in the drawing of 1766, and the schoolhouse, with its tall chimney, presents but few alterations. The site of the tower is, however, occupied by a comparatively modern brick building adjoining the station-house in Chancery-lane, in which reside the school teachers of St. Bridget's parish ; and I cannot trace in it any remains of the tower. It may, I think, be fairly inferred that a graveyard adjoining a round tower was of very great antiquity ; and it is to be regretted that the late Ecclesiastical Commissioners, with such ample funds at their disposal, or the Poor Law Guardians, or the parishioners, did not make some effort to preserve from desecration the ground hallowed for so many centuries, and occupied by the remains of the citizens of Dublin.

The tower was of very early date, and resembled in some respects that of Drumbo, in the County Down, which I lately described, when I ventured upon the following suggestion :—Touching the matter of the name said to be usually given by the annalists and native Irish-speaking people to a round tower, as *Cloic-theach* or "House of the Bell," as originally published by Walsh, and subsequently recorded by Lynch and Sir Thos. Molyneux, an erroneous notion seems to have gone abroad that it meant the habitation of a large swinging bell hung in the top of the structure, either for the purpose of alarm, or calling the congregation to worship. A baptismal well, a very early church, a cell, a book, or the relic of a saint, would naturally be the earliest memorial of Christianity after the arrival of St. Patrick in this island; and next, and probably contemporaneous with these, would be the hand bells subsequently used in the celebration of mass, which articles must have been more general than either of the others, and were held in such veneration that some of our oldest and noblest specimens of metal work and enamelling were fashioned to enshrine them. Whatever may be advanced by speculators as to the original intention of the earlier of these towers, it is manifest to me that this name was derived from their subsequent use as repositories for the small sacred bells used in the neighbouring churches. The ordinary large swinging cast bell was not contemporaneous in Ireland with the erection of these structures; and even had such been used in the more modern ones, surely some fragment of one of these objects would have been found ere this.

Since the foregoing was sent to the printer, I have procured a copy of Part III. of the "Proceedings of the Saint Patrick's Society for the Study of Ecclesiology," for 1857, in which Mr. J. Huband Smith has written a most interesting article on the Church and Round Tower of St. Michael le Pole, and afforded much information connected with the subject referred to in the foregoing pages. He has also given a lithograph of a copy of one of Beranger's drawings, and likewise a view "drawn from a sketch taken in 1751, Birmingham Tower in the distance," but of which he has not furnished any description, or assigned an author. He has, however, recently informed me that the drawing from which he made that illustration was formerly in the possession of Sir William Betham (Ulster). It is very difficult to understand this sketch, which appears to have been taken from Chancery-lane, for it would be almost impossible to bring in Birmingham Tower in any such view. Captain Betham informs me that that drawing No. 95, was sold in London, along with several others, at the sale, by Sotheby and Wilkinson, of his father's MSS. in 1854."

LANYON, LYNN AND LANYON'S DESIGN FOR CARLISLE BRIDGE.

At length there is a prospect of effecting an improvement which every citizen has long desired. A committee of the Corporation, to whom such subjects are referred, arrived at a unanimous resolution yesterday, recommending that Carlisle-bridge be rebuilt, in accordance with the plans submitted to the council by the eminent firm of Lanyon, Lynn and Lanyon, in 1863, and awarded the prize offered for the best design. It is many years since a public work of any magnitude has been executed in the Irish capital, and we believe that none could be undertaken more likely to meet with the approval of the public. The present structure belongs to an antiquated period. It is a solecism in the midst of progressive improvements on every side. Its inadequacy to accommodate the increasing requirements of the city has been a subject of universal complaint for many years. The inconvenience and risk arising from the necessity of forcing through its narrow gorge the converging traffic from seven leading thoroughfares of the city are matters of every-day experience. None can doubt the great advantages to be derived from having a structure adapted not merely to the urgent necessities but the improved tastes of the metropolis, and repeated attempts have been made to procure the erection of a suitable building. Most of these were based upon a delusive expectation that the Government would take the matter in hand, and either directly by a grant, or indirectly by the remission of the carriage rents or other imposts which are tributaries of the national revenue, supply the necessary funds. The result of these ill-advised overtures has been that until now nothing practical has been done since 1846, when the subject was first mooted, and a special Act of Parliament was passed giving the Corporation power to levy over the whole municipal district the amount required for the erection and repair of bridges. If the council adopt the recommendation of the committee, as we trust they will, the new structure, which will be immediately commenced, will be one of the most attractive and convenient in the kingdom. It will materially enhance the appearance of this most prominent part of the city, and form a handsome link between its finest thoroughfares. Its estimated cost is £50,000; and it is intended to extend the charge upon the outlay over a period of twenty years, so that the addition to the rates will be hardly perceptible. The whole amount, including interest—which each year will become less—is computed at £2,500 a year—a mere bagatelle in comparison with the whole municipal fund. We notice, with pleasure, any evidence on the part of the Corporation of a desire to keep pace with the architectural improvements which private enterprise has effected in our city, and to supply increased facilities for commercial intercourses.—*Express.*

THE LATE J. S. MULVANY, F.R.I.A.I., R.H.A., ARCHITECT.

The intelligence of the above gentleman's recent demise at the comparatively early age of fifty-seven, and after a brief but severe illness, has been communicated to us, and we have no doubt that the event will be regarded as a loss to the architectural profession, of which the deceased was for many years a distinguished member. Mr. Mulvany was a pupil of the late William Deane Butler, and son of the late Thomas J. Mulvany, R.H.A., an eminent artist, whose other sons, William, George, Richard, and Thomas were likewise eminent in their respective spheres of art and science, and, with the exception of George (late director of the National Gallery), still survive. At a very early age Mr. John S. Mulvany was taken by the hand by some of the first nobility and commercial men in Ireland, and became architect to the Dublin and Kingstown and Midland Great Western Railways, to the city prisons, several clubs, the Mullingar Lunatic Asylum, and a host of private individuals for whom princely mansions were erected from his designs. Mr. Mulvany's *forte* was unmistakeably Classic Architecture; he was a great admirer of the late Mr. Gandon, of whom his father was the bosom friend and biographer. The Broadstone, Galway, and Kingstown Termini, and the Royal Irish Yacht Club-house at Kingstown, are samples of his ability; and it might have been well had he not ambitioned other less orthodox styles of architecture. During late years Mr. Mulvany was extensively engaged as a railway valuator and arbitrator, and was one of the promoters of the Dublin Trunk Connecting line, as well being architect to the company. Amongst his several pupils are Messrs. J. C. Campbell, W. R. Farrell, J. J. Lyons, Thomas Mannin, &c.; and for a lengthened period the efficient services of the late talented Raffles Brown were secured by Mr. Mulvany.

ANNADALE, NEAR BELFAST.

The lithograph illustration given with the present number is of a house just completed, a short distance from Belfast, for James Greer, Esq. It has been erected from the plans and under the superintendence of Mr. Livingston Macassey, of High-street, Belfast. We understand that the entire work has been carried out by day labour.

NOTES OF WORKS.

The directors of the Holywood Gas Company, Limited, County Down, have decided on considerably enlarging their works, in order to meet the increased consumption required in this rising locality, and have already commenced a portion of the new works, and entered into a contract with Mr. William Minick, builder, Holywood, for the formation of gas-holder tank, at a cost of £1,170. The works are being carried out from the plans and under the superintendence of Messrs. Louch and Wilmot, C.E., of Dublin and Belfast. Mr. J. M'D. Bermingham supplied the quantities for tank.

The parish church of Morristownbiller, Co. Kildare, is having a new chancel added to it from the designs of Mr. Thomas Drew, F.R.I.A.I. Messrs. J. and W. Beckett are the contractors.

The foundation-stone of the Belfast Working Men's Institute and Temperance Hall was laid on Saturday on the site selected at the corner of Queen-street and Castle-street. The various trades of the town and vicinity walked through the principal thoroughfares to the scene. The ceremony was performed by Miss Charters. About £3,000 have been subscribed towards the cost of erection.

The following are works which are either in course of erection, or to be commenced forthwith:—

New Roman Catholic schools, Donnybrook, for the Very Rev. Dean O'Connell. Mr. R. Courtney, Dundrum, contractor.

New farm-steading for the Rt. Hon. W. F. Cogan, M.P., at Tinode, Blessington, County Wicklow. Messrs. J. and W. Beckett, South King-street, builders.

New convent chapel for Sisters of Mercy, Tipperary.

New Dominican church at Drogheda.

New chapel for the Sisters of Mercy, Stanhope-street.

For the above works Mr. G. C. Ashlin. 90, St. Stephen's-green, is the architect; and the quantities have been supplied by Mr. James Farrell, architectural surveyor, 59 Harcourt-street.

HEALTH OF DUBLIN.

In the Dublin registration district (which extends over an area of 9,745 statute acres, and had, by the Census of 1861, a population of 314,409), the births registered during the week ending May 7th, amounted to 181. —91 boys and 90 girls. The deaths registered during the week were 134—66 males and 68 females. The average number in the corresponding week of the previous six years was 138. Four deaths resulted from fever, viz., 2 from typhus, and 1 each from typhoid or enteric, and simple continued fever. Scarlet fever caused 5 deaths. Three deaths were ascribed to croup, and 2 to whooping cough. Eleven children died from convulsions. Nineteen deaths were caused by bronchitis, and 5 by pneumonia or inflammation of the lungs. Four deaths were referred to paralysis, and 2 to apoplexy. Heart disease proved fatal in 4 instances. Two deaths were attributed to liver disease, 1 to jaundice, and 1 to diabetes. Twenty-three persons died from phthisis or pulmonary consumption, and 2 each from mesentric disease, and hydrocephalus or water on the brain.

The number of deaths registered in the entire of the Dublin Registration District during the week, represents an annual ratio of 22 in every 1,000 of the population by the census in 1861. In the surburban district of Rathmines the annual ratio was 17 per 1,000; in Donnybrook it was 19—the City of Dublin Hospital and the Hospital for Incurables are situated in this district; in Blackrock the rate was 30; and in Kingstown 26 deaths per 1,000 of the population by the Census of 1861.

NOTES OF AN ARCHITECTURAL TOUR IN ITALY, IN THE AUTUMN OF 1869.*

(Continued from page 104.)

From Milan, *viâ* Camerlata, to Como we went to get a glimpse of the most beautiful of the Italian lakes, stopping at the pleasant hotel at Cernobbio, on the margin of the lake, near the villa d'Este, where the unfortunate Queen Caroline resided for some years. The Cathedral of Como is not so interesting as many of the others, though its doorways are very fine pieces of Italian Gothic, and its eastern end a very skilful piece of Renaissance architecture, adapted to the cruciform and domical form, of which I took a sketch. The Broletto—or town hall—is very interesting, built of various coloured marbles, and possessing a balcony or "ringhiera," from which the public could be addressed,—a feature of very common occurrence in the civic buildings of Northern Italy, and one well deserving of adoption in our town halls, where the necessity for mob oratory so frequently occurs. The Gothic architecture of Como is more decided and indigenous than anything at Milan, and generally in marble instead of brick. The prevalence of semi-circular apses, surrounded at their upper stages by open arcades with shafts, and the use of coloured materials in alternate bands or voussoirs are also remarkable.

From Cernobbio a pleasant drive brought us to the lake and town of Lugano, a favorite sojourn of English families and tourists. The scenery of this lake is perhaps tame compared with that of Como, but really each of these three lakes has a charm of its own. The architecture at Lugano is chiefly of Renaissance type, and there are some good details, the work of some of the great masters of the revival; also some effective campaniles, in which, however, one form seems to be adhered to throughout the town. One of the churches possesses a magnificent fresco of Bernardino Luini, one of the largest and, I believe, the best of the works of this artist, whose pictures are so much valued in the cities of Northern Italy. From Lugano to Porlezza, and thence again to the shores of the Lake of Como, arriving at the point where it branches into two arms, one towards Como, and the other to Lecco. This is indeed a rare concentration of magnificent scenery. Passing in front of Bellaggio, in a boat, we reached the eastern shore, and thence by the Austrian military road leading from the Stelvio and Splugen passes we proceeded to Lecco, enjoying a magnificent panorama by the way. The construction of this road is very creditable to the Government of the Kaiser, albeit now obliged to abandon it to the new Kingdom of Italy; and the care taken to provide resting places planted with trees at frequent intervals along it, is very remarkable. We lost no time at Lecco, but, having here again arrived within the limits traversed by the railway, took our places for Bergamo, and early next day proceeded to explore that city, the modern portion of which lies flat, and the older on the summit of a steep hill or rock commanding an extensive view over the plain of Lombardy, and apparently selected as a position capable of defence. The older Italian cities seem often to have been thus built, perched on lofty crags, as we shall see when we come to notice Perugia, Orvieto, and others; "a city set upon an hill which cannot be hid," being apparently the favourite idea. The Broletto, which is met with immediately on entering the enclosed space at the summit, is very similar to that at Como, and contains some excellent Italian Gothic detail. Beyond this is the Cathedral and the Church of Sta. Maria Maggiore, the porches of which latter are much deserving of notice, as thoroughly characteristic of Italian Gothic, and unlike anything in Northern Europe. They are frequent in other cities, but this was the first that we lighted on. They may be described as consisting of a pair of pilasters at each side of the doorway, beyond which is a pair of detached columns supporting an arched roof of stone, with iron ties generally at the springing, and either a level cornice or gabled covering. The doorways are generally semicircular headed, and the arched roofs either semi-circular or pointed. Mr. Street gives a very good general sketch of one of these, of which we also made some sketches of the details, on the richness and elaboration of which so much depends. The columns almost invariably rest on lions, or similar animals, of red Verona marble; and this gives one rather a painful idea that the poor beasts would be cruelly crushed if we could imagine them real instead of marble. I think, however, the idea of placing lions or other effective animal forms in such positions is very good, but by placing them couchant in front of the pedestals of the columns, or else giving them such a load as would appear reasonable even for a lion to bear, this painful idea would be got rid of. This will be seen presently, when we notice how the classic revivalists used the same forms in the palaces of Genoa and Naples. I think these porches very useful as well as effective features, capable of translation either into English Gothic, or Classic architecture. I cannot agree with Mr. Street in considering the columns as "simply ornamental, and not as constructional features;" and suggesting that, "perhaps the shafts, being really incapable of supporting any considerable weight, would be better if, by their twisting and moulding, they were clearly shewn by their architect to be meant to be ornamental only." If this be a fair specimen of the "fighting for truth," for which the school represented by Mr. Street profess such earnestness, it is not much to their credit. I think it is very evident the columns in these porches have a distinct and clear duty to perform, and they could not be removed without bringing down the canopy resting on them. How then can they be described as "merely ornamental;" and supposing them to be already apparently too slender for the duty they have to discharge, how could that be mended by twisting or moulding them? If the columns stood without carrying any load other than a statue, as do those in the Piazzetta at Venice, and the triumphal columns of the ancient Romans, there might be some excuse for such criticism, but certainly none for it here.

We managed to pick up a few bits of detail in Bergamo—amongst others a tomb of the cardinal-archbishop de Longio in the Church of S. M. Maggiore, displaying very similar feeling to that shown in the design of the porches above mentioned,—and then proceeded on our journey to "Brescia l'armata," an important military town, well fortified, and with many historic recollections. It possesses two cathedrals, the older of which is interesting from its circular nave, and shows how remarkably the Italian mind has always been addicted to the domical form for churches of large dimensions. Undoubtedly, had not Gothic architectnre in Italy been overwhelmed by the classical revival before it became fully developed, we should have had the problem of a Gothic dome fully solved, as it was pretty nearly by the Duomo at Florence. This old church, however, is neglected and ruinous, aud a garish Renaissance pile erected alongside it, not particularly interesting, though large in dimensions and costly in execution. The brick architecture of the old Broletto at Brescia and in some of the churches is interesting, and as good as anything of the same kind to be seen elsewhere; and a few good details of Renaissance work are to be found in the buildings erected since the revival. There are several excellent private collections of pictures; and, after these, the next object of interest is the Campo Santo, a public cemetery some distance from the town. It is said to be the first of those in Italy, and is laid out on a regular architectural plan. There is a handsome domical mortuary chapel in the centre of the entrance, and on either side wing buildings of great extent and good design, in each compartment of which the several families of note in the city have their burial-place. The idea is open to considerable objection as compared with our ideas of a place of sepulture, and is too artificial for my taste. But apart from this, both the architecture and the sculpture of the monuments is far beyond anything of the kind to be seen in our country, and many of the latter especially displaying refined taste and exquisite execution. I should not omit to notice the classic antiquities of Brescia, consisting of an ancient Roman temple, now carefully preserved, and filled with objects discovered in the vicinity,—sufficient just to give one a foretaste of the rich treasuries of Roman art to be found in the Southern Italian cities.

From Brescia to Cremona, famous for its lofty campanile—I believe the highest in Italy. It stands at one angle of the Duomo, an example of the Lombardic brick architecture already referred to, with modern alterations and additions, causing its façade and other important parts to present an incongruous aspect. The tower is of very noble proportions, and, with many of the other Italian towers—whether of the Mediæval or later periods,—shows how well the Italians always comprehended the principles on which a tower should be designed. Rarely, if ever, is one to be found springing out of a building, by which its base is concealed and height dwarfed; and rarely, also, is any great amount of opening or ornament to be found till we reach the upper storeys. The Italian towers or campaniles are almost always detached, and spring up boldly and simply till they have got well clear of the adjacent buildings; and then, and not till then, they are opened out with windows and arcades, varied in form, and finished with balconies, spires, and other suitable architectural treatment. This is very noticeable in Venice, where many beautiful campaniles are to be found; and this principle seems to have been also acted on by our own Mediæval church builders in their towers and spires, and by our great classic architect, Wren, in his numerous and beautiful towers and spires in the City of London, showing fully that, however diverse the styles in which the several architects worked, the principles of taste recognised and acted on by each were the same.

It is just the same in any other art—as, for instance, in rhetoric. What orator other than of the stump description would commence with the flowery parts of his speech? He commences with his facts, continues with his arguments, and winds up with his peroration; and this is really doing in that art what these artists in brick and stone did in the architecture of their towers. It makes no difference what language may be spoken by the orator, and in the same way it makes none in what style the architect may work.

The details of the upper part of this tower are very simple and bold, but so much the more effective from the distance at which they must be viewed.

The cathedral has some very fine work on its several fronts, and the details of windows and pinnacles in red brick are well deserving of study; it affords, however, a remarkable instance of a bad practice which appears to have arisen at a very early period in the history of Italian church architecture,—that of making the gables and façades of the churches bear little or no relation to the section of the buildings; accordingly, we often find a huge piece of wall rising far above the roof, and a sloping gable on it, differing altogether from the rake of the latter. This evil practice was adopted by the architects of the revival also, with most grievous results on their work, as often it happens that all the pleasure derived from the contemplation of some well-proportioned and enriched façade disappears the moment we turn the corner and find that it is a mere sham and disguise, and belongs to a building of totally different proportions. I had fondly hoped that this sort of thing was only perpetrated by the petty church and chapel builders of our own day, who have made it sufficiently disgusting, but was sadly disappointed to find it prevailing even at the most advanced periods of art in Italy, and in the practice of architects of the highest reputation.

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* Read at Ordinary General Meeting of the Royal Institute of the Architects of Ireland, April 21st, 1870, by Mr. William Fogerty, F.R.I.B.A., Fellow.

The view from the Torazzo at Cremona gives one a good opportunity of sketching the outlines at least of the numerous other towers and campaniles of the city, and I took advantage of it to that end. The classic revival here was not attended, as in other cities, with the introduction of any new materials, from which the inland position of the place debarred it; but the architects of the revival seem to have made very fair use of the local material in adapting it to the forms of classic architecture, as shewn in the sketches accompanying. The iron work of the ordinary buildings in all these cities deserved notice, being nearly always wrought; and in balconies, door heads, and gates often displaying good taste in the adaptation of forms.

Cremona, *viâ* Piacenza (without stopping), to Parma, one of the little capitals that recent political events have rendered simply provincial; of course it retains many recollections of its court days, especially in its ducal park, laid out and kept in order for many years by Marie Louise, second wife of the Emperor Napoleon, but which is now sadly neglected.

The cathedral is a very fine specimen of the Lombardic style, in brick, so prevalent, and gives plenty of examples of brick cornicing and moulding. The interior is celebrated for the frescoes of Correggio under the dome, which have suffered so much as to be nearly unintelligible, and can best be studied by the water colour copies of them in the museum. The baptistery presents a very interesting specimen of those curious buildings so frequent in Italy, and rarely found elsewhere. It is, of course, polygonal, vaulted inside, and surrounded by a series of detached Lombardic shafts and entablatures—not arcades, and is very remarkable whether as a piece of design or construction. As is well known, wherever these baptisteries exist, all the children in the city are brought to be baptised there, and a useful register kept; their spaciousness, and the facilities they present for total immersion, make them very suggestive to those who regard that condition as essential; and the large and important religious denomination to which Mr. Spurgeon belongs might take a few useful hints from them.

Some of the later churches of Parma, in brick, are well designed, especially the campaniles, one of which I sketched. It fully illustrates the principles already referred to.

The museum, picture gallery, and library at Parma are richly stored, and bear testimony to the public spirit of Marie Louise, who seems to have been liberal in their endowment. The St. Jerome of Correggio, and the Madonna della Scala, by the same artist, are worth going a long distance to see; though the latter, like all his other frescoes, is much damaged.

The vast and rambling pile of buildings constituting the ducal palace contains a theatre of noble proportions, though, from its being built altogether of wood, it is fast falling into decay. Notwithstanding its enormous dimensions,—nearly 300 feet long by 107 feet wide, and 84 feet high, capable of holding 6,000 persons,—its acoustic properties are stated to be very good, and it seems equally adapted for dramatic or lyric performances; and its plan and arrangement offer many useful ideas that might be well availed of in our large concert halls. There is also a very fine modern theatre, and a noble bridge, erected by Marie Louise, whose statue, by Canova, in the museum, albeit classicised into Minerva or Juno, is still a very fine work, and with the numerous other memorials of that princess, shew that she possessed an amount of taste and public spirit in the encouragement of art worthy of the imperial house from whence she sprung.

Parma to Piacenza, the cathedral of which gives another example of the Lombardic style, with a lofty campanile, and noble western front and rose window. The choir, as at Parma, is raised above the nave, and a vast subterranean church, the vaulting of which is supported on a vast number of columns, with great variety and beauty in their capitals. The domestic and civic buildings contain many details of interest, and there are several huge palaces of the later Renaissance period, one of which, though of rather a debased type, presented an unusual and very useful feature in the angle balcony resting on a single column, shewn in the sketch.

From Piacenza to Pavia, having nearly returned to our starting point, Milan, which is but a few miles distant. This city is full of churches of the Lombard type, in red brick. The cathedral appears to have been begun in this style, but subsequently was handed over to Bramante, whose grand ideas for its completion are shewn in a model, only a portion of which has been carried out, and from its unfinished state presents rather a bare and unsatisfactory appearance. The shrine or tomb of St. Augustine is certainly a noble work of Mediæval Italian sculpture with some modern additions. These costly shrines, of which there is one at Milan, to St. Pietro, and another at Bologna, are generally deserving of careful study, and display a close union of the highest excellence in architecture and sculpture, such as we have few examples of in these countries, certainly none in modern times. The campanile of this cathedral, begun in the Lombard style, and on a very noble scale, seems to have got into the hands of some able architect of the revival who added a belfry stage to it of very fine design, and had his work not been interrupted, would, in all likelihood, have produced a tower fully equal to that of St. Mark's Square at Venice, to which it bears some affinity.

As an example of a very complete and homogeneous Lombardic church, that of the Carmine, otherwise called S. Pantaleone, deserves notice, and attracted our attention, and I may say admiration, to such an extent that we made a full set of sketches of its elevations and details. It has also a good campanile, a fair specimen of its class. The Church of St. Francesco is also another very fine specimen. The Church of St. Michele, in the same city, is also very interesting from its antiquity and the curious manner in which sculpture is introduced on every alternate course of the masonry—a mode of introducing it more curious than commendable, but which nevertheless, in the modern craving for novelty, found some would-be imitators, as may have been observed in some of the designs submitted in competition for the new Government Offices.

The university and other later buildings are not very interesting. The College of St. Carlo Borromeo—a large square pile with an enclosed court and double internal colonnade, on the plans so generally adopted in all the Italian palaces of the last three centuries—is a fine building, and that style of plan seems to suit it very well.

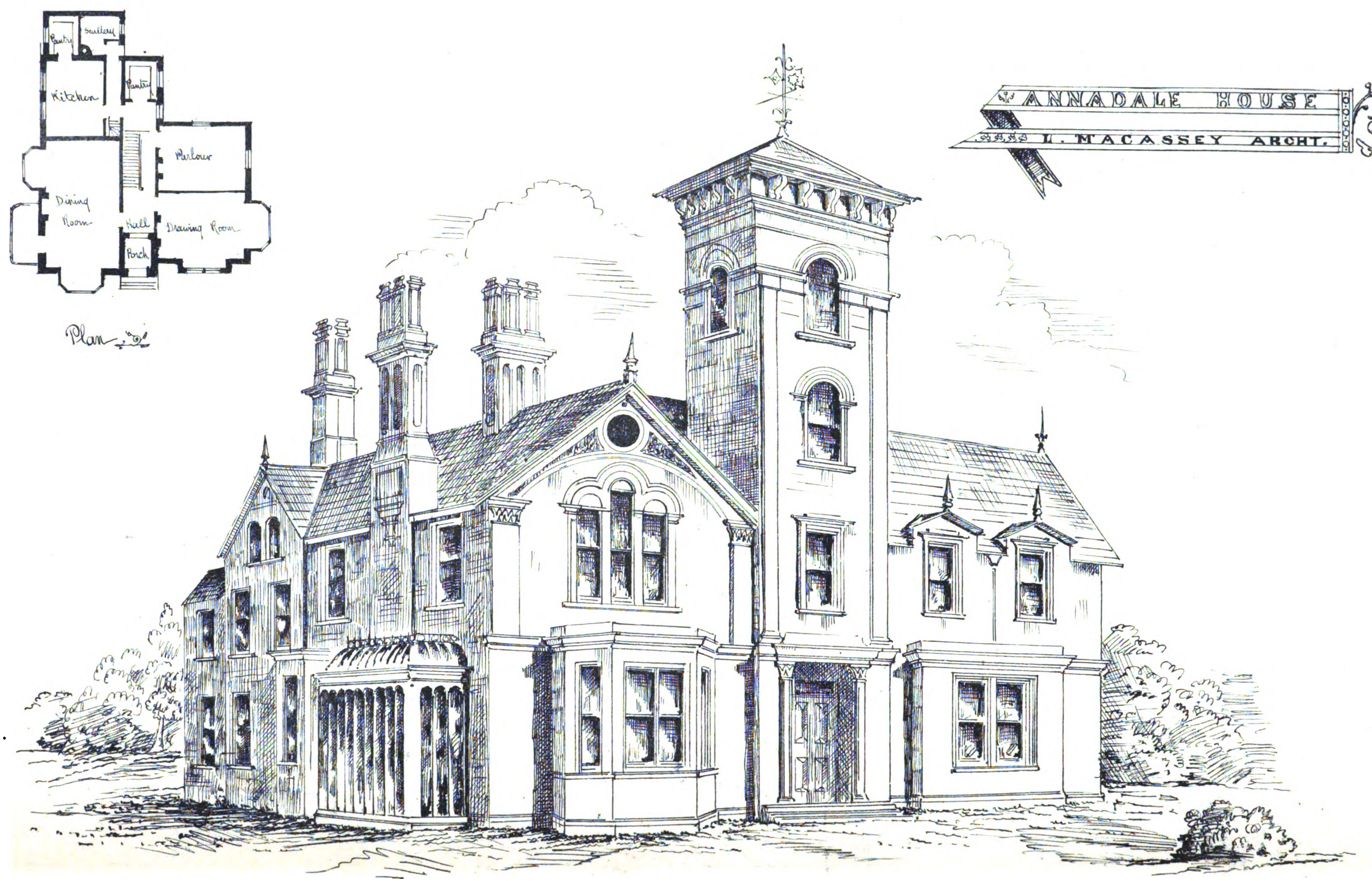
From Pavia, of course we made an excursion to the celebrated Certosa, within a few miles on the road to Milan, said to be the most sumptuous monastery in the world. If the circumstances under which this magnificent institution was founded are to be taken as furnishing any example of the motives which influenced the generality of the founders of similar institutions, it does not say much for their piety. It owes its origin to Gian' Galeazzo Visconti, who, having secured the dukedom of Milan by a long course of crime, including the murders of several near relatives, sought to atone for his evil doings by founding this monastery. The church is, of course, the culminating point of interest. The western façade seems rather later in character than the rest of the church, which is an unusually rich specimen of the Lombard brick architecture, and exceedingly varied in its composition as well as interesting in detail. The western façade is an extremely rich piece of Italian Renaissance, or rather of that variety of it we are accustomed to call *cinque cento*, classic principles not yet having become fully developed, and the chief characteristic is the amazing amount of richness in material and detail. The interior of the church, although retaining the original Lombardic plan and general system of construction, is loaded with rich marbles, sculpture, and painting of later type, such as language can hardly convey any idea of. The cloisters and houses of the monks are, however, of the early type, and, as displaying the adaptability of this style to domestic and conventual uses, are very interesting.

Having completed our round to the west of Milan, we determined, before proceeding southward, to take a glimpse at Turin and the Mont Cenis Pass, and soon arrived there. This city, till recently the residence of the sovereign, is very different from the other Italian cities, being laid out on regular plan, with wide and straight streets. The architecture, however, is essentially prosy, and a good deal of it belongs to the "rococo" or "baroque" type, being a style which, while generally bearing some affinity to the classic Renaissance, seems to delight in the violation of every principle of sound taste, and the adherence to every petty scholastic rule instead. The royal palace and the picture gallery, however, are worthy of a visit, the latter containing many rich treasures of art, chiefly transferred from the palaces of Genoa. There is no Mediæval architecture of any consequence, except, perhaps, one fine old château on the banks of the river. The churches are nearly all Renaissance, and, except perhaps the celebrated Superga, which derives most of its interest from its situation on a lofty summit near the city, are not very interesting. Few cities occupy such a beautiful situation as Turin, however; and the views of the Alps from its streets and squares are very magnificent. The Jewish community seem to be wealthy and important here, and, in recognition of the religious liberty in which this city for a long time stood almost alone in Italy, are erecting a gigantic synagogue, which may be best described by saying that it looks like two or three large Roman temples piled one over the other, and all surmounted by a dome nearly equal to that of St. Peter's. A few hours by rail brought us to Susa, the first station of importance in the approach to Italy from France, where is the terminus of the Mont Cenis railway, a clever idea, but I fear, like the celebrated atmospheric system, once so much cried up, likely to turn out of no great practical benefit. The magnificent road made by Napoleon over the Mont Cenis range has been simply supplemented by a single line of rails laid down on a portion of its ample width, in the centre of which is an elevated rail, giving an increased grip, by means of horizontal wheels, to the engine. A great increase on the speed of the ordinary diligence is doubtless attained, but the line is exceedingly liable to derangement and accident, and a great obstacle to a high speed exists in the numerous sharp turns and twists unavoidable in any road ascending and descending such heights; however, it is pretty certain to be soon superseded by the tunnel in progress from Modane to Bardonêche, and meanwhile has served important purposes.

From Turin to Genoa is an interesting journey, giving fine views of the Pennine Alps, on passing over which a magnificent panorama of their southern slopes is obtained, in the midst of a huge amphitheatre of which "Genova la Superba" is situated, crescent shaped on plan, and with its lively port in front, and surrounding hills dotted with churches, monasteries, and villas, fully justifies the appellation, as seen from a distance. This impression is a little disturbed when we alight near the water side, amid an amphibious and dirty population, and begin to thread the narrow streets, lined with houses of preposterous height, which surround the quays; but the waterside districts of our own seaport towns, such as Rotherhithe, Wapping, and the ports of Dublin and Liverpool, most frequented by seafaring men, give us nothing to boast of. I think the appearance, and also the sanitary condition of the port of Genoa, have not been improved by the erection of the vast and costly arcade of marble which has been built along the quays to separate

ANNADALE HOUSE

L. MACASSEY ARCHT.



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between the port and town, the top of which however gives an agreeable promenade.

The Gothic remains in this city are not very numerous, but thoroughly distinct from anything we had yet seen. Indeed this is very remarkable throughout Italy. Except that Milan and a few neighbouring cities seem to have had the style known as "Lombardic" common to them, the Mediæval architecture of every city in Italy seems almost as different from that of the neighbouring cities as from that of other and distant countries, such as England and France. This is doubtless to be accounted for by the fact that they were each the capitals of separate states, though using a common language, and were often also at war with each other, engaging in more serious rivalry than that of the arts. The Cathedral of Genoa is a work of deep interest, in white and black marble in alternate courses, and with a profusion of inlaid ornament in geometric patterns of the same coloured materials. The proximity of this city to the marble quarries of Carrara and elsewhere seems to have told upon its architecture, in which that noble material is so generally employed. The other Gothic churches are generally interesting, the plan approaching to the basilican type, of which so much is seen at Rome; the façades exceedingly well proportioned, and enlivened by the use of the marble in alternate courses. The towers seem to be nearly all of one form, an octagonal pyramid with four square pyramidal pinnacles at the angles. A sketch of the English church about being built shews that the architect has well studied these features, and considers that they bear reproduction.

The Renaissance churches are numerous and very rich; that of the Carignano is of almost cathedral dimensions, with a lofty dome, commanding a splendid view of the city and harbour, but otherwise in corrupt taste. The church of the Annunziata is, however, more deserving of notice, being an extremely rich and costly church, on the basilican plan, with single fluted Corinthian columns between the nave and aisles, from which arches spring without any intervening entablature,—an arrangement very general in churches of this class in Italy, and evidently far more reasonable than the practice adopted by our Anglo-classicists of putting a bit of entablature over each column, as in St. Martin's-in-the-Fields and other London churches. As being the first important basilican church we had yet seen, I must acknowledge to being much struck with its very noble internal effect, enhanced as it is by the profusion of marble, gilding, and painting used in its decoration, of which we have nothing to compare in these countries.

But it is for its palaces that Genoa is chiefly and deservedly celebrated, being in their number and the excellence of their architecture, as well as the art treasures they contain, no way inferior to those of Rome and Venice. Several of the leading streets, as the Via Balbi and Strada Nuova, are lined with them, and thoroughly noble and aristocratic are they in proportions and general effect. They generally present a square façade of two or three storeys to the street, and in some instances have open colonnades or loggie at each side, forming screens to enclosed gardens, and giving the inmates a pleasant promenade or belvidere in which to take the air. The ground floor is generally raised on a basement storey, with the stairs to it within instead of outside, and the pavement of the cortile is kept level with the ground floor also. Some of these have served as models for our modern club-houses, and no better could be selected. The vastness of the dimensions and the justness of their proportions give them a striking air of grandeur, and their interior courts, staircases, and saloons are nearly always worthy of their noble purposes. The pair of couchant lions at the foot of the stairs from basement to ground floor in one of them, now used by the university, and the extreme elegance and richness of the upper staircase of white marble in another, the Palazzo Durazzo della Scala, are things to be remembered; though as these buildings are all ably illustrated by Gauthier, we did not do much sketching in them, but had to be content with rambling through their noble balls and saloons, and just getting a glimpse of some of the masterpieces of Guido, Velasquez, Vandyke, Rubens, and other great masters, with which they are filled.

In fact, since my return, I have found that many subjects that we lighted upon and sketched, as those that find great spoil, have been already much better drawn by previous travellers; and I would therefore recommend anyone about to take a similar tour to spend some time before he goes in a good architectural library, and learn what he can calculate on finding already well illustrated, and what not. There is plenty of matter not drawn as yet, and the illustrations already accessible can always be usefully supplemented by detail.

At Genoa we took steamer for Leghorn, where we arrived early next morning; and having bestowed but a hasty glance at that clean and modern-looking city, started for Pisa, where, indeed, a rich treat awaits every architectural student, such as to exceed all previous anticipation. The city is pleasantly situated on the Arno, with wide and open quays, along which are to be seen several palaces or mansions of Gothic character in brick, the tracery and other details of which are worth studying. The roofs of these, generally of later date, project enormously on cantilivers—an arrangement very general in Tuscany, and capable of very artistic treatment. Adopted in Italy chiefly for shade, it recommends itself for use in this country as a protection against rain.

The Church of the Madonna della Spina on the quay is rather an architectural curiosity than a work of high art to my mind, and seems rapidly falling into decay. The Church of St. Paolo, which soon arrested our attention, is a better specimen of the style characteristic of the city, and which critics call "Pisan Romanesque." It is remarkably well proportioned, basilican on plan, and displaying in its exterior the frequent repetition of the semicircular arcade so common to this style. Colored marbles are used very judiciously, especially on the flanks. But this church is but a foretaste of the wondrous group of buildings formed by the Cathedral, Baptistery, Leaning Tower, and Campo Santo, which all stand by themselves outside the town. The design of the cathedral seems far more consistent and homogeneous throughout than almost any other I am acquainted with; and though one is disposed to tire of the endless repetition of semicircular arcading, still the little resemblance to any other building, and the ability with which this leading idea is carried all through, with the judicious variety of colour in the material, make up for this. The interior no way disappointing, and from the lightness of the prevailing color of the material, the height of the nave, and abundance of light, also, I may add, the exceptional cleanliness, gives a much more lightsome and cheerful effect than any other cathedral I know of. It is basilican, with transepts and apse, and a level ceiling to the nave richly gilded; and as the first example of this form of nave ceiling I had seen, though so frequent in Rome, commanded my intense admiration. The variety and beauty of the inlaid decoration was very remarkable; also the elegance of the interior details, of which we made a few sketches. The Baptistery is another architectural marvel, whether as a piece of design or construction, and contains a pulpit of rare sculpture, the work of the celebrated Nicolo Pisano; also a large number of interesting mosaics. I should not forget that the pulpit in the cathedral is a more modern work, and the staircase in particular is very cleverly managed, being formed by a series of radiating corbels of appropriate form springing from one of the nave piers.

Of course we ascended the Leaning Tower, and found a new and perfectly satisfactory theory of our own to account for its inclination, which is, that the tower having no roof, the rain getting into it had no way out, and so had to form one, at which point the ground soon began to give way, until a proper system of drainage was adopted, which arrested the settlement of the foundation; and a careful system of iron ties kept the superstructure so compact as to maintain its equilibrium. Nevertheless, the conviction comes very strongly on one's mind that sooner or later it will come down, though we may hope not for many a long day.

The Campo Santo close at hand consists of a vast rectangular enclosure, with an open arcade of rich tracery on the inside, and is remarkable not alone for its architectural character, but for the series of early Italian frescoes with which the inner surface of the outer wall is covered. These are somewhat damaged, but in much better preservation than many similar works of later date. The series of scripture subjects and the last judgment of Orcagna are very remarkable; there are also two or three by Giotto. Having been for centuries looked upon as inferior works, the prevalence of pre-Raphaelite ideas has caused much notice to be bestowed on them of late, and they have found an able exponent in Mr. Ruskin. The cloisters are filled with monuments of almost every subsequent period of art, some of the modern works being of high class as works of sculpture.

Our time being limited in this interesting city by the sailing of the steamer, which lay at Leghorn only for one day, we were obliged to tear ourselves away, conscious that we were leaving many treasures of art in it still unexplored; and, having re-embarked, after two nights and a day's further steaming, our vessel cast anchor early in the morning in the Bay of Naples, and that celebrated city lay in full view before us, crescent-shaped, like Genoa, Vesuvius on the right, with the mountains over Castellamare and Sorrento and the island of Capri, while on the left stood out the opposite islands of Procida and Ischia. The largest, if not the most famous city in Italy, if we except its beautiful and historical surrounding, it scarcely presents such a rich field for art-study as other cities of lesser importance. These surroundings, however, including Pompeii and Herculaneum, are nowhere to be equalled in the insight they give into the arts and antiquities of classic times. As soon as we had well clear of the trouble of landing, therefore, we took rail to Herculaneum, or rather the adjacent station of Resina, and were soon engaged exploring the excavations there, proceeding on a subsequent occasion to Pompeii, some miles further on, on the opposite slope of Vesuvius.

As is generally known, the circumstances under which Herculaneum and Pompeii were overwhelmed were very different. The former was buried in lava, of a hard texture, as difficult to excavate as solid rock; the latter covered up with ashes which never reached beyond the consistence of cheese. Accordingly, the few buildings that have been explored at Herculaneum are only to be reached by shafts like those of a mine, and surveyed by artificial light, while the other city admits of being laid bare to the sky, and traversed with as much freedom as in its days of life and prosperity. The theatre at Herculaneum is pretty well cleared out, pillars being left to support the superincumbent lava, and it presents the usual semi-circular form of the Greek theatre admirably arranged for seeing and hearing. Most of the objects of art have been removed to the museum at Naples, where, with the treasures of Pompeii, they furnish an inexhaustible field for the study of Roman art. It will be many a long day before all the treasures of Pompeii are explored, as there does not seem as yet to be more than a fourth of the city laid bare, and at the rate at which the excavations are now going on, about a dozen men and women being employed, the remainder is likely to occupy a much longer time than what has been done. Nevertheless every month some fresh objects of interest and value are discovered, so much as to make one wish that limited liability or some other modern system of enterprise could be applied to expedite the work. The arrangements of the Italian Government and the able director of the excavations, Cav. Fiorelli, are, however, such as to give visitors every satisfaction in seeing the ruins, in which we spent two or three days of intense delight. The admirable Pompeian house at the Crystal Palace by Sir Digby Wyatt, and the Pompeian palace in the Avenue Montaigne by M. Normand, as the fruits of earnest and deep study of the architecture of this beautiful city, convey very faithful ideas of the domestic arrangements and finish of the houses, and the public edifices have also been ably illustrated by Sir Wm. Gell and others. There is a wondrous air of refinement pervading everything in this city; such a thorough perception of beauty, grace, and harmony, and an absence of everything constrained or vulgar, that we cannot forbear comparing our buildings and the objects of art to be found in our households, with the confession that not in one house out of a hundred around us would be found such evidence of correct taste and refined ideas on art as appear in every house here. Take, for instance, the marble tables, one of which stood in the atrium of nearly every house in Pompeii opposite the entrance, supported on upright slabs carved generally into lions' heads or similar forms, and having noted the correctness of drawing and exquisite execution, compare this with say one of the best marble chimney-pieces turned out by one of our very respectable marble masons. Where have we house-painters or decorators capable of designing and executing such varied and lively dancing or rather floating figures as appear on the panels? The walls of the houses are nearly all perfect, built of the volcanic tufa of the district, cut into square blocks, with brick quoins and jambs, and carved with hard stucco, but the roofs have nearly all disappeared. The large public building known as the Basilica or hall of justice does not seem ever to have been completed, the columns being only about 4 feet high, but its plan is clearly marked out, and is interesting as giving the type so universally adopted throughout Christendom for Christian places of worship. The amphitheatre is in very perfect preservation, on the same model as the Roman colosseum, but from its being filled up still with ashes, its substructure cannot be so well examined as that of Pozzuoli. Having wandered to our heart's content through this wonderful exhumed city, we next proceeded to study the treasures of art recovered from it in the museum at Naples, an imposing pile of building originally intended by one of the Spanish viceroys as stables, and, nevertheless, well suited for its present more dignified purpose. The vast assemblage of ancient sculpture on the ground floor is second only to that of the Vatican, and includes two subjects of world-wide fame, the Hercules and the Toro Farnese. The collection of Etruscan, Greek and Roman vases is, I believe, the most extensive in the world, beautifully outlined with historical and mythological subjects. The picture gallery, though extensive, does not include many works of high class; but, as might be expected, the Pompeian antiquities stored there constitute the culminating point of interest. Mosaics, sculptures, frescoes, jewellery, and bronzes, including household furniture and utensils of every kind from the buried city are carefully classified and catalogued, and make one long for leisure to study fully what the limits of our tour only suffered us to glance at.

Our next excursion was to Baiæ and the northern shore of the Bay of Naples, in company with a most intelligent guide, whose knowledge of history, topography, and geology, and careful attention and civility, we had pleasure in recognising. The road from Naples passes the celebrated Chiaja, or seaside promenade, lined with the hotels of wealthy residents, and beautifully planted and embellished, and soon reaches the grotto of Posilippo, which ought to be called by its proper name of tunnel. Its existence proves that the Roman engineers were as able in this branch of their art as in others, though, from the few occasions in which it needed to be applied, so few examples exist. The tunnel in question has been cut down to level the roadway in modern times, and is, accordingly, unusually lofty. Emerging from it, the road skirts the bay for some miles, passing on every hand masses of brickwork, the substructures of Roman baths, villas, and tombs, and frequent indications of the slumbering volcanic fires which abound in the whole district. We were, of course, invited to inspect the famous Grotto del Cane, and see a poor dog asphyxiated, but declined, as indeed anyone who can find pleasure in that cruelty need only go as far as Guinness's Brewery to find plenty of opportunity of doing the same in the monstrous vats in that establishment. The amphitheatre at Pozzuoli, however, richly repays a visit, being of much the same dimensions as that at Pompeii, and a fair specimen of the numerous provincial structures of this kind, based on the model of the colossal one at Rome. The substructures can be easily examined, and form a labyrinth of brick vaulting, of the most accurate planning and sound execution. In fact, the marks of the bricklayer's trowel on the mortar joints are quite apparent, and the brickwork seems so hard and compact as to need blasting or some similar means to effect breaches in it. On examination of this brickwork, as well as other specimens of the Roman age, one is greatly struck with its superiority to that of the present day, both as to the materials and the skill displayed in combining them. The bricks are much thinner and wider than ours, but hard as iron, and thoroughly square and sharp; and no matter what depth in from the face of the wall, the work is still thoroughly bonded and filled, without any difference in the quality of the bricks used. To us who find it so difficult to get even tolerable work done, with all our elaborate systems of contracts and inspectors, the contemplation of this work suggests many thoughts. For instance, these great amphitheatres were built by heathens to minister to the coarsest passions of the populace, and neither in their designers nor builders can we suppose any very high moral principles were recognised, and yet the work in soundness, accuracy, or honesty infinitely excels even our efforts of piety and charity. I expect the explanation is to be found in the fact that these great Roman works were really built (to borrow a phrase from our auctioneers) "regardless of expense"; and were we to attempt to get similar work done by our builders or bricklayers, we would be instantly met with the hackneyed objection which every architect who strives after any unusual excellence of work has often to listen to,—"that style of work wouldn't pay at no price." However profuse their expenditure, it is clear from the result that these old Roman ædiles were particular as to one thing—namely, to get money's worth, and have here undoubtedly got good value for their outlay.

The classic lakes of Avernus and Lucrinus, the Sybils' Cave, and the worn-out but still warm crater of the Solfatara, were all duly inspected by us, not forgetting the interesting ruins of the Temple of Jupiter Serapis, the columns of which, of green African marble, have been eaten away by marine animals at such levels as indicate that the coast, after the erection of the temple, became submerged, and afterwards raised to nearly its original level. Those who desire to enter on the full discussion of this interesting subject will find it investigated at length by Sir Charles Lyell, in his "Principles of Geology." Returning along this classic shore to Naples we pass the column recently erected in commemoration of the expulsion of the Bourbons, with four lions at the base, in corresponding positions to those at the base of our Nelson Column; but here all comparison ends. Bearing in mind that the scale and pretensions of this Neapolitan monument are so far beneath that in Trafalgar-square, there is an expression and interest attaching to it that our great monument has not. Instead of each lion being in the same prosaic and formal attitude, so that when we have seen one we have seen the whole, each of them here is deserving of separate study; and though severe critics may consider the action displayed in them overstrained and melodramatic, nevertheless they strongly impress on the spectator the idea intended, of an oppressed people for a long time patiently enduring, but at length roused into fury and bursting their bonds asunder, denouncing "woe to the tyrants."

The churches of Naples, like most Italian cities, are very numerous, being about in the proportion of one to every thousand of the population. The cathedral and two or three others belong to the Gothic period; but, beyond their general plan and a few details, little remains to mark the state of art at that time, and they have nearly all been transformed or decorated by the later architects of the classic revival, often with profuse outlay and rich materials, but seldom in good taste. The royal palace—a vast edifice, by Dominic Fontana—contains a magnificent series of state apartments, and in particular a noble staircase of Sicilian marble, one of the finest I have ever seen. Indeed the staircases in these Italian palaces are generally very splendid, the steps being usually single slabs of marble, and the proportions of the treads to the risers (generally 20 in. by 4 in.) so easy as to make the ascent scarcely felt. The balustrades, pedestals, supports of the landings and ceilings too are generally treated in sumptuous style, and the material used throughout marble, so as to make these staircases, whether as regards their design or construction, as perfect and finished specimens of architectural art as can well be conceived.

The royal palace of Caserta, which we visited on our way to Rome, contains, I think, the most magnificent staircase I have ever seen, of noble proportions, enriched with coloured marbles and sculpture. This building, now almost wholly unused, is a most complete specimen of a royal palace, and though somewhat formal in plan is excellent in its arrangement, and marvellously solid and sound in construction. The late Sir Charles Barry, whose abilities for planning have been seldom excelled, appreciated and ranked this palace very highly, and his great idea of the central octagon hall in the Houses of Parliament was probably suggested by it.

(To be continued.)

THE SUEZ AND DARIEN CANALS.*

In introducing the subject—"The Probable Geological Effects of the Permanent Opening of the Suez and Darien Canals"—Professor Haughton said he thought the title of his paper did not convey an accurate idea of his meaning, for he believed that the effects in a geological sense of the permanent opening of these canals would be negative. The whole question he was anxious to bring before the society was one of interest and importance, not as regarding geological effects, for his opinion was that the small labours of man exerted on any part of the globe would not produce any change, either physically or morally, of any kind. The opening of these canals was a question which was of great importance in respect to the intercourse of one portion of the human race with another. He wished to draw the attention of the meeting to a very extraordinary and remarkable difference which existed between the canals in the extent of geological forces that either aided or impeded the progress which man proposed in creating those two canals. One of them was destined to be aided by one of the most powerful forces on earth, and the other was impeded and would ultimately be destroyed by it. They were aware that the Suez Canal was a revival of an ancient canal which formerly existed, and its geological conditions were essentially different from those of the proposed Darien Canal. In the former they had to cut an opening between two seas—the Mediterranean and the Red seas,—and the project was carried out many years ago by our ancestors, and had failed in consequence of the forces co-operating against it, and the present experiment was not aided by any more forces of nature than the ancient. In the long run nature would again prevail, and the forces that are tending to close the canal would ultimately shut it up, no matter what funds are contributed by nations for its maintenance. The demonstration of this was simple, and to geologists the question was in a nutshell. The Mediterranean Sea was situated in a part of the earth where the evaporation exceeded the rainfall, and the total of the whole was measured at the Straits of Gibraltar by the magnitude of the current that runs through it, and there was a constant stream running inward from the Atlantic, in the centre of the Strait, at the rate of three and a-half miles an hour. In the Red Sea, at the other side of the canal, they found—partly owing to the south-east winds that blew up the sea, and to the excessive evaporation above the rainfall—a constant current setting from the Indian Ocean up towards the Red Sea. The currents from the Straits of Gibraltar and Indian Ocean met somewhere in former times, and produced the Isthmus of Suez by raising a gigantic bar, such as is caused at the mouth of a river by the meeting of the sea and the river, which caused still water, and thereby allowed the sand, &c., carried down by the current to deposit. Professor Haughton proceeded to state that in the ultimate struggle political grounds would give way to nature, and the canal would close up. It did not appear clearly that it would be the policy of mankind always to contend against nature, and, of course, as a naturalist, he must maintain that such a struggle would always end in a victory for nature. From inquiries he had made, he understood that the Khedive of Egypt, who, no doubt, was an intelligent man, and would no doubt wish to study nature, was the owner of five-eights of the shares in the Suez Canal, and the same Khedive was owner of the railways from Alexandria to Suez; and if he discovered that it would be more profitable that the whole traffic should pass through the railway instead of the canal, he might some day or other vote against dredging it, and quietly allow the railway to supersede the canal. The canal was a mere scratch, drawn by a child across the bar of a great river, and could have no geological effect, for the Indian and Atlantic oceans laid down a sediment in it, and made a bar which no engineer could cope with. In the case of the Darien Canal, so far from opposing nature, man was assisting her, and he had no hesitation in saying that the undertaking would be a splendid success. From a political point of view, persons were of opinion that it was more important than the opening of the Suez Canal, for it would give them the celebrated "north-west passage." This canal was first brought under the notice of geographers by Dr. Cullen, of Dublin, who is still alive. The maximum height of the cutting to be made in it would be 1,200 feet, and it would be worth any cost to have the Atlantic opened into the Pacific. It was well known that the current of the Atlantic ran round by the Gulf of Mexico and back to Europe, thus carrying the heated water which made this climate so favourable. Some Yankees said that, if the Darien Canal were cut, Europe would be frozen, as the current of heated water from the Atlantic would flow through into the Pacific; but, supposing that the canal was a mile in width and 100 feet deep, there would only be 100,000th part of the heat taken away from Europe; and, from a calculation he made, he found that it would cost 2s. 4½d. to each family in Dublin per year for extra coals. This current, which would be at the rate of between two and three miles an hour, would act as a dredge, and assist men's efforts; whereas, in the case of the Suez Canal, the currents, meeting in the centre, caused a bar which would fill up the canal. The geological effects, in the sense of physical geology, in the case of the Darien Canal, would be interesting, because nature would be helping man; but in the other case she was opposing him. It ought to make mankind feel very small in the presence of the Great Force that had constructed the globe on which we lived. They talked of their engineering works and their power, but they had no more power over nature than the minute insect had over the man he eats. Professor Haughton concluded by repeating his belief that the Suez Canal would eventually close up, whilst the Darien Canal would be a successful undertaking.

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* Paper read by Professor Haughton at Meeting of Royal Geological Society, Ireland, Wednesday, 11th May.

The Chairman inquired if the water of the Mediterranean was more saline than that of the Atlantic—was there any way in which the Mediterranean could discharge the saline matter left by the excessive evaporation?

Professor Haughton said that at 1,000 feet deep the water of the Mediterranean was only a little more saline than the Atlantic, and at a deeper point it was much less than might be supposed. It was, therefore, necessary to suppose that the salt was deposited at the bottom at the rate of 100 inches per annum.

In reply to further questions,

Professor Haughton stated that the Isthmus of Suez was formed as the line of low current under former geological conditions, and when, as he believed, the Sahara was under water.

After some discussion,

The Chairman said he thought he remembered it being stated at a meeting in London that a bank was forming very near the Mediterranean mouth of the canal, and the general opinion was that it was caused by an engineering mistake.

DESIGN IN SHOP FRONTS.

(Continued from page 104.)

The precise point, in fact, wherein the shopkeeping mind needs education is, that good architecture forms a feature of attractiveness in itself. A shop front composed of nothing but plate glass is like a picture without a frame. The picture may in itself be a good one, but will frequently be passed over in favour of another not near so good, if the other be only placed in a richly-decorated frame. In like manner, the articles displayed by a tradesman, without the accessories of appropriate building decorations, lose half their power of attracting customers. We are conscious of descending from high artistic ground in taking this view, but it is nevertheless a near and true view of the subject, and, until the shopkeeper has obtained some independent art education, it is the only one likely to have much influence with him. The passion for enormous sheets of plate glass has perhaps done more to prevent the creation of good designs than anything else. It is a most expensive taste; the prices of the largest sheets are truly enormous, and the danger of fracture entails a heavy charge for their insurance or replacement. Added to this, it is perfectly impossible for the architect to do anything in the way of decorating them. The utmost he can attempt is the introduction of sash bars in brass, mahogany, or some coloured material; and these he is called upon to keep as thin as possible, in order that the valuable sheets may display their full dimensions. He must add nothing that shall diminish their size, or hide as much as a few inches of their surface. These instructions, while embarrassing to the designer, seem to us entirely unnecessary and useless in a multitude of businesses. In most shop windows that we have observed the goods shown are arranged with some idea of classification more or less accurately defined. Thus, the shoemaker has his ladies' and gentlemen's department; the retail stationer his paper, book, print, and *bijouterie* department; the linendraper has a host of separate departments; and so on through the greater number of trades. In the more extensive businesses, the duty of arranging the goods for display—or "dressing the window," as it is called—in each department is entrusted to a separate individual, believed to possess special knowledge or taste in that particular line. It would be a great assistance to such an individual if the space allotted to him were marked by well-defined lines, and ornamented with fit architectural designs; and there can be no doubt that such a plan would prove quite as potent in attracting customers as the heterogeneous display often jumbled together behind one or two enormous sheets of plate glass. Such a division would be most appropriately marked by the perpendicular lines of columns or piers required to support the arch or bressummer above; and if its principle were universally admitted, the trade purposes of the shop would be perhaps more perfectly fulfilled than now, and a field would be opened at the same time for the taste of the designer.

The next question that arises is, What should be the general principle regulating the taste of such designs? Not many years ago, in the dandy days when the "first gentleman in Europe" gave the tone to all things social and artistic, it was an accepted maxim that street architecture should aim at a principle of uniformity, so as to produce a superficial and deceptive appearance of extensive grandeur. It was under the influence of this principle that Regent-street and the various other London improvements of the time were designed. A study of better models, and a more truthful and healthy tone of public sentiment, has, however, brought this maxim into discredit. As the lines of street frontage are, in fact, split up into various proprietorships, are occupied for a great variety of purposes, and as the owners must naturally have a great variety of tastes, it is only fitting and proper that all these facts should be expressed in the architecture. Hence it may be inferred that no one style can be said to be universally preferable to another. Variety in gracefulness and adaptation forms the true principle of beauty in this case. Each house elevation and each shop front may differ from its neighbour, and provided it be neither tasteless in itself, and the contrasts not inharmonious, the general result will be far more striking and satisfactory than an effort at Classic grandeur, or an effected greatness which every beholder knows does not extend an inch below the painted "compo" in which it is executed.

There are, however, several cautions to be observed in the application of the various styles to shop fronts. In the period just referred to, architecture and design were nothing if not Greek or Roman. Shop fronts of course partook of the prevailing taste, but it was not perceived that the style adopted should not be that of the Classic *temples*, but of the smaller and more domestic structures. We gladly welcome the grace and delicacy of Grecian detail, but solemnity and grandeur, which were chief characteristics of the ancient temples, are utterly unsuited for the light and airy character appropriate to modern shop fronts. If, therefore, a Classic style be adopted, the designer must beware of mere copyism. We do not want a reduced model of a portion of any ancient building, originally designed for another climate and another purpose, but an example of the modifications and adaptations of which the style is capable. Beauty, accuracy, and finish should be the aim rather than breadth, and the Classical forms should not be degraded to mere nicknacks. Any person who has entered into the spirit of the style will consider Doric pillars, although surmounted with metopes, triglyphs, and guttæ of the most orthodox proportions, strangely misplaced, if the intercolumniations are to be filled with plate glass enclosing bizarre productions undreamt of in Classic Greece, or if they only adorn a shop board where salmon and mackerel, or sprats and lobsters, are laid out in state.

Many hints for successful studies can be gained by a careful observation of the French and Italian Renaissance styles, as well as from the English Renaissance known as the Elizabethan. There are several good examples of these extant in the streets of London familiar to most people, such as that designed by Mr. Herring for Messrs. Swan and Edgar, in Regent-street; that of Fortnum and Mason, in Piccadilly (in which, however, the windows are somewhat smaller than would be permitted nowadays), and at the corner of Berners-street, Oxford-street. It would seem that the Renaissance styles are more promising of tasteful variety than any others, because of their extreme plasticity. They are founded—the foreign styles more particularly—not upon the style of the ancient sacred edifices, but upon that of their smaller works—their triumphal arches, baths, houses, and other buildings of a domestic and civil character. Hence their characteristic is not magnificence, but elegance. The various Classic orders are used avowedly as details of decoration, and there is no limit to the multiplicity of both sculptured and chromatic ornament which may be introduced. These are matters of great importance in designs which must come so close to the eye as shop fronts. We have already referred, incidentally, to the use of the pointed styles. Here, as in the other styles, the aim should be beauty, not grandeur; and recourse for models to be studied—not copied—should be had to domestic and civil rather than to ecclesiastical art.

The question has often been raised whether there is a probability of any really new style of architecture ever being invented. If it be, we think it is as likely to be developed from a faithful study of the present subject as from any other. The variety of possible treatment being great, it offers the most likely field for putting new architectural ideas to the test of experiment. The scale of construction is usually but a small one, and the materials used not always being of so durable a nature as stone and bricks, opportunities are afforded of alterations and rectifications impossible in other departments. We are not justifying the sudden execution of immature and heedless notions. The experiments should be well considered, and carefully executed; and if such experiments were carried on the small scale for which shop fronts offer so favourable a field, their effect would soon show whether they were likely to succeed if tried upon a larger and more enduring scale.

Besides the general question of the fitness of styles, there is that of special adaptation both of convenience and design to special businesses. On the point of convenience the opinion of members of each trade will deserve great weight; on that of design some remarks are necessary. The idea of illustrating the trade by the design of the building, though containing some truth, has been carried to absurd lengths. Thus we have existing, in Gerrard-street, Soho, a shop front designed originally for a seal engraver's, though now occupied by a carpenter and undertaker; and this consists entirely of a magnified quatrefoil panel—a piece of detail appropriate enough as an ornament in tracery, but preposterous when applied to an entire window. We think this perhaps the ugliest shop front to be seen in London. Again, we have a Regent-street shop front, where Indian shawls form the staple of trade, in which the pillars take the form of palm trees, with their crown of foliage; and another, devoted to the sale of umbrellas and parasols, in which the lines are all of the curved shape characteristic of umbrellas, and of the architecture of Eastern India, the native home of the umbrella. These forms, being beautiful in themselves, are tolerable; but the further application of the principle needs great care and taste on the part of the designer. The trade is best indicated by the actual goods exhibited, and any architectural reference to it will be more appropriately found among the details of embellishment than in the misuse or mere enlargement of structural forms.

Some shops, as those of fishmongers, butchers, and poulterers, require an open space entirely free from plate glass. In such cases the aim should be to produce a pleasing interior, and much scope is afforded to produce good effects. The use of ornamented tiles for wall decorations opens a field for chromatic decoration in such cases, of which the designer should not be slow to avail himself. In shops for the sale of provisions a good effect, both of spaciousness and cleanliness, is given by the employment of white glazed tiles, either with or without ornamental patterns being worked in with them.

It would be so manifestly impossible to lay down a series of complete rules for the design of shops for particular trades, that we have chiefly attempted, in the foregoing remarks, to enunciate general principles which may be taken up and worked out by any one who applies himself to his vocation with a spirit above that of the mere trader or mechanic. At the same time, a few hints of a very brief kind as to some peculiarities in the more usual classes of shops may fittingly close the subject for the present.

A *Butcher's shop* requires to be open, as a rule. If windows are used they should be movable; they are only wanted in the coldest weather; at other times plentiful ventilation must be provided for, both when the shop is open and closed. This affords an opportunity for designing some good ornamental ironwork above the line of shutters. The general aim must be to produce a good interior.

A *Poulterer's shop.*—A somewhat rusticated style of woodwork would seem very appropriate for this shop, and the wood would have a more pleasing effect if it retained its natural colour and were simply varnished.

Jeweller's shop.—This requires a design of great elegance and richness, yet very plain. If the ornamentation of the front be too luxurious, it will tend to depreciate the rich effect which should be produced by the goods within. Jewellery is best set off by the use of dark polished wood, slightly set of by gilding. A similar remark applies to any window used for the display of fine art productions of the smaller kind.

Upholsterer and Furniture Dealer.—This trade requires length rather than height, and a considerable depth of view within. The aim should be to show a pleasing interior enclosed with glass, differing in style from the interior shown in those not so enclosed, in the same manner as the styles of internal and external decoration naturally differ.

The business of a *Seedsman and Florist* is mostly carried on in the suburbs, and the shop has no building above it. This gives a good opportunity to make use of a very light style. Single sheets of plate glass appear, however, inappropriate, inasmuch as they do not afford sufficiently ample means of ventilation. The aim should be to give a considerable depth of interior view. The upper part might be a conservatory.

These remarks form only a specimen of what might be said respecting the special requirements of a number of trades, but to add to them would be useless, as any individual design must be subjected to requirements which cannot be foreseen. All that we can do is to draw attention to this too-neglected field, and to point out that though the works are necessarily constructed upon a small scale, they are well worthy of being carefully studied and designed, and that, if they were so, we should not only add much to the attractiveness of our streets, but might create a taste for true and genuine works, which would materially promote the art education of the people, and help on, although in a humble way, the progress of art itself.—*Building News.*

ALKALINE TRACING PAPER.

SAMPLE sheets of a new Alkaline Tracing Paper have been forwarded to us by Mr. Thomas Edmondson, of Dame-street. We have given it a fair trial, and can confidently recommend it to our architectural friends and others who may require such an article. It is transparent, and of such a tough substance, and sold at such a price, as should induce parties to use it in preference to the very expensive article "tracing linen." The sheets measure 40″ x 27″.

MISCELLANEOUS.

NEW POSTAL SYSTEM IN AUSTRIA.—A new mode of postal communication, suggested in this country, is being employed in Austria for short and insignificant messages. Cards are sold for three centimes, and the sender writes the address on one side the message on the other, and throws it into the nearest letter-box, thus economising the expense and trouble of envelopes. The postal cards are stamped and circulated by thousands over the Austrian empire, and they are in universal use at railway stations, and for correspondence on journeys

A CONCRETE FROM GAS LIME.—It is well known that gas companies turn out of their works a quantity of lime which has absorbed certain impurities from the crude gas. Hitherto, the only use found for this offensive smelling gas-lime, has been the very limited one of spreading it on the land and at the roots of trees for killing insects hurtful to vegetation. Of course this is out of the question in the case of the large city gas-works, whose plant is too far removed from fields and orchards, and, although it is acknowledged that gas can be better purified by lime than by any other material, the trouble of removal of the waste product has forced the adoption of other methods which do not involve so much expense in carriage. As we mentioned some time ago, Mr. Thomas Prideaux, of Sheffield, has been exhibiting blocks of concrete, mouldings, artificial stone slabs for hearthstones, and other objects, all made from this refuse gas-lime; and as it is now the subject of a patent, and promises to furnish a useful material for building purposes, a short account of the results obtained up to this time may be useful. The gas-lime is ground under edge stones, and presents at first a uniform green colour. In this state it forms the raw material for making plaster or cement of various qualities and capabilities. According to the purpose required, it is used in this state, or it is calcined and reground and mixed with silicious matters. A wall may be covered with a smooth coat, which hardens free from cracks, for interiors; basements may be covered with a dry coat of cement, impervious, it is asserted, to damp, and quite obnoxious, be it remarked, to cockroaches. A hearthstone may be formed, and sets in a few days into a hard block of stone, as well as mantel pieces and jambs, which, without any colouring matter, present a neat and stonelike appearance. It is remarkable that the peculiar odour of the gas-lime is no longer to be detected when the cement has set. The sulphur compounds are oxidised rapidly, and some of the adhesive qualities of the cement are no doubt due to the formation of calcium sulphate or plaster of Paris throughout the mass of the material in the process of hardening. A rubble wall can be built up and plastered over to resist the action of water in the interval of a tide, as the properly prepared cement will set even under water. The latter property has induced Mr. Prideaux to propose its use for building sea-walls.—*Builder*.

An advertiser in the *Builder* announces that he "has discovered the long-lost but simple process by which the ancients moved their immense blocks of stone, still the mystery and wonder of modern architects." He requires the aid of any architect, builder, or other person that will supply the means to bring it out.

ANCIENT RECORDS RELATING TO IRELAND.—In the House of Commons on Friday night, Mr. W. Gregory asked the Secretary of the Treasury if it was the intention of the Government to take any steps to furnish the Irish Public Record Office with copies of such ancient English records as relate to Ireland? Mr. Stansfeld said the subject referred to in the question of the hon. member has been under the consideration of the Treasury on more than one occasion. At present, however, all the resources of the Record Office are absorbed in *English work*, but when that work has been disposed of, I can see no difficulty in some portion of their time being employed in making copies of Irish Records in England.

NOTICE.

The Proprietor of the IRISH BUILDER *requests that all parties who have been furnished with accounts from the office will send the amounts of same immediately.*

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The Irish Builder.

VOL. XII.—No. 251.

Street Architecture in Dublin.

PROFESSOR C. A. Cameron's lecture at the Royal Institute of the Architects of Ireland reminds us of many absurdities in our lines of street architecture. Dublin has decidedly improved in this particular within a few years, but unfortunately it is, to some extent, confined, as a new cotemporary jocosely remarks, to "insurance offices and gin palaces." We have now but few opportunities for designing palatial mansions or magnificent public buildings like our ancestors in bygone days; we are almost exclusively confined in the exercise of the mysteries of the twin sister of the arts to mercantile establishments, the proprietors of which are never satisfied unless we give them enormous opens filled with plate glass, with no visible means of support except sham pilasters for a heavy superstructure, upon which, from this cause, it is impossible to develope taste; possibly, keeping this in view, the genius who has designed the unsightly structure now in process of erection at the corner of Winetavern-street, on the quays (which we understand is intended for a gin palace), having no scope in the substructure, directed his entire attention to its super. We were for a considerable time puzzled to discover what its sky outline was intended to represent, but plasterers have been busily engaged upon it for the past few weeks, and they have brought into view, by a plentiful application of Portland cement, six ludicrous imitations of round towers perched upon its parapet. We trust, for the honour of the profession, the design will be ignored by the architects of Dublin, and that it will prove to be the production of some juvenile anxious to try his "prentice hand," who has derived all his architectural knowledge from enlarging details upon a panel in a carpenter's workshop; or possibly its merits may be due to the poetic imagery of the proprietor, which would lead him to a realization of Moore's celebrated lines, "On Lough Neagh's banks,"—everybody knows the remainder, we need not quote them; but unfortunately for his misapplied taste, there are few attractions for the fisherman in the fetid waters of the Liffey, and still fewer chances of his round towers being reflected "shining beneath its waves"—at least in their present contaminated state.

ROMAN CATHOLIC (NEW) CEMETERY,

MILLTOWN, NEAR BELFAST.

THE important works for the drainage of the Roman Catholic Cemetery at Milltown, near Belfast, which have been in progress for some time past, were completed since our last issue. As these works have some features of interest not only for our civil engineering readers, but also for all persons interested in the surface and sub-surface drainage of lands, we give here a brief description and explanation of the features and arrangements of most interest.

The grounds at Milltown have several points of interest to the geologist, as they lie on the eastern slopes, and near the southern declivity, of the ridge of high hills which stretch from near Moira, skirting the valley of the Lagan and Belfast Lough to Island Magee. This ridge protects, shelters, and covers their eastern declivity from the water-bearing westerly winds. The configuration on this side is common to the whole ridge, except where at intervals the streams from the tops have washed away the softer parts in their torrent floods to the adjacent lough. The higher part of this ridge is composed of chalk limestone capped by trap (black) rock, which is in some places but imperfectly consolidated. This part is steep and precipitous. It lies on a bed of the marly clays, which, from its lesser resisting power to the wash of water which descends from the stiff district above, has a gentle angle of surface inclination. In some parts of the district to the east of the hills this bed of clay extends down to the shore of the lough and the bed of the River Lagan. At some few points the bed of sandstone (new red) which underlies the marly clay protrudes at elevated points in the bed, and crops out at the higher elevations in the clay bed. The grounds of the cemetery is on one of these points. The sandstone is so weak that it has been quarried and sold as sand, principally to ironfounders. The dip of this and the other beds is to the west, at a considerable angle. The sand bed, where exposed, on the banks of the adjoining stream, and in the sand pit (quarry) face, presents the usual stratified appearance of upper layers; these vary irregularly from a few inches to about two feet. Some are tolerably firm, whilst others are weak as beach sand. It will be seen from the interchanging order in which these strata lie on one another, that water-bearing and water-conveying strata are found at different depths in the freestone bed. As the out-cropping of the bed is very irregular, and as the bed is covered in belts with a compact sleech clay, which varies from a few to several feet in depth, the superimposed impervious clay scaled most of the out-cropping strata, which were in consequence converted into reservoirs. So soon as one of these strata reservoirs would be tapped, by a pit sunk from the top surface through the scaling bed of sleech clay, the water would rise rapidly and flow over the surface of the ground.

The drainage of these grounds was entrusted to Mr. John A. Smith, C.E., Belfast, whose skill and knowledge of hydraulics has been favourably and fully tested when placed in antagonism with some of the best hydraulic engineers both of England and Ireland. It will therefore be of greater interest to observe the process by which he proceeded to ascertain the necessary data to enable him to scheme a design which would in its execution give for certain the required results. The first proceeding was to make a contour survey for the surface configuration, and to lay out sites for trial pits to be sunk to the sand bed in every case. This being done, the pits sunk, and the depths and levels taken, the inflowing water was allowed to "find its own level." The relative levels of the water surface in the several pits were then taken, and on the data so obtained the scheme for the perfect drainage of the grounds was designed. There is a minimum depth for drainage settled by law, but this depth would at Milltown be insufficient to make the drainage sufficient for the purpose. It was determined, and designed, to ensure the sufficiency of the drainage, by making a main drain to intersect the several out-crops of the sandstone strata immediately in advance of the scaling clay bed, and at such a level as to drain the water off the whole district, so as to have its surface several feet below the minimum fixed by law. The bottom of this drain, although from 17 to 22 feet below the surface, did not lie in the sand bed at all parts, as it was found that in two places the sleech clay bed was of a greater depth. Into this main drain a series of lateral feeders convey the waters taken up at a corresponding depth, passing their flows at points of junction through a trap sink. There are, besides the trap sinks here spoken of, two expensively constructed silt reservoirs, sunk to about 8 feet and 10 feet below the bottom of the drain, delivering the water through a retarding screen into them. The water-conveying part of the drains is arranged in stone and brick,—both being frost proof; the bricks are laid dry close together, forming the outer shell of a pentagonal drain, which is hand filled with stones varying in size from 6 to 2 inches. The whole is covered with a straw screen, to secure them from fouling during the refilling and ramming of the drain. A novel and important expedient is introduced at intervals at the stone and brick work in the bottom of the drains, and continued to the top surface. This consists of dummies and diffusers—both formed of straw or hay. The dummies are very simple in their construction, and they are as inexpensive as they are simple. These valuable vehicles are made by twisting loosely a few strands of straw rope so as to make a soft rope about 5 to 7 inches in diameter; these are laid along the side of opening from the top surface to the channel of the drain below, in a sloping direction, at about 15 feet apart; the lower end of the dummy discharges into a thin flake of straw fastened to the side of the opening, by which the surface water conveyed by the dummy is delivered gently into the deep drains. This expedient is of the greatest importance, since it insures and effects the top surface drainage. An important feature in the design of these works is the absence of constructions of doubtful or difficult execution in confined spaces at great depths, so that the permanence and efficiency is not made a matter of difficult attainment. It may be observed that the straw rope water-conveying channels will not be destroyed by the decaying of the straw matter, as the stuff refilled into the drain trench will be fully consolidated before the straw will be decayed, so that the channel will thereafter remain an open passage; these are to be covered at surface by the engine cinders of the top coating of footways, under which are placed the feeders to main drain. This filter bed at top will secure the channels for surface water from injury. With or without the filter at top the expedient will be found valuable in many places.

THE MAUSOLEUM IN HEADFORT DEMESNE.

THE consecration of this structure, erected by the Marquis of Headfort, took place on the 5th ult. The ceremony was performed by the Lord Bishop of Meath. The mausoleum was erected by Mr. Henry Sharpe, of Kells, from designs by Mr. J. F. Fuller. The building is in the Gothic style of the early part of the fourteenth century. It is octagon on plan. The centre portion, which is supported by eight arches, on richly-moulded columns, rises to a height of about 100 feet, terminating with a handsome cross. The total width below is about 42 feet. The gable over the entrance doorway is filled with elaborate Gothic tracery; in the centre compartment are comprised the arms of the noble marquis, surmounted by the coronet and crest. The entrance archway is richly moulded, and the jambs have double marble columns. The floor is laid in a rich pattern of Minton's encaustic tiles.

WAR DEPARTMENT CONTRACTS.

MR. George Carolin has been declared triennial contractor by the War Department for all the Barracks in the Dublin District, together with the Forts and Rifle Ranges, as advertised in our columns.

ABOUT CARLISLE BRIDGE.

Just one hundred months ago an advertisement appeared in our columns from a committee seeking for "plans and specifications for the erection of a new bridge on the present site, the full breadth of Sackville-street." Premiums of £200, £100, and £50 were offered for the three best designs. Upwards of sixty designs were sent in, and exhibited at the "Royal Institution," College-street (where now stands the new Provincial Bank). The competitors naturally expected that the referees would give their decision within a reasonable time, but alas! "hope deferred made the heart sick." On turning to our volume for 1864 (18 months after) we find the following award as sent forth by the gentlemen to whom the matter was referred:—

Dublin, 20th January, 1864.

Gentlemen,—In fulfilment of the duty which, at your request, we have undertaken of selecting from the competitive designs for a new bridge on the site of the present Carlisle Bridge, those which, according to our judgment, are entitled to occupy the three first places in the scale of merit, we beg to say that we have carefully examined the whole of the drawings exhibited, and have accorded those three first places to the undermentioned designs, and in the order given, viz.: Number 1 in order of merit, and number 22 in printed list, Page and Turner; number 2 in order of merit, and number 23 in printed list, Lanyon, Lynn and Lanyon; number 3 in order of merit, and number 44 in printed list, Moy and Pole.

Richard Griffith.
J. G. M'Kerlie.
Samuel Downing.

We may be in error in stating (although it has been rumoured) that those premiums have not been as yet paid to the successful (?) parties, or that small portions of them had been offered and rejected. It has been hinted also that many of the competitors have up to the present failed in getting their drawings returned by the committee. This should not be the case, after the time and labour spent on getting them up.

On a former occasion we briefly criticised the several designs, and printed the estimated cost of each, ranging from £24,000 to £52,000. We reproduce Messrs. Turner and Page's design (see illustration) for a one-span iron and stone structure, and which was awarded the first premium. In a descriptive circular issued by those gentlemen, they propose that "the bridge shall be level; the whole breadth of Sackville-street; abutments of stone; iron superstructure, and provision to do honour to illustrious men. The principles of the design are—that the structure should be of the most substantial and permanent kind; the waterway improved; and least possible obstruction offered to admission and discharge of fresh and tidal waters. The design consists of a single arch of 140 feet in width, with a rise of 10 x 6; the trace rib and rib under the footpath springing at the level of high water. The ribs under carriage-way are 1 foot lower, to obtain greater depth and rigidity. The distance from face to face of embankment is 157′ 6″, consequently abutments would stand out 8′ 9″ beyond line of embankment wall. The construction of the arches would be in cast iron from the abutments to within 25 feet of the crown of the arch, the centre piece forming the key of the arch, 50 feet, being of wrought iron, so that the thinnest part of the bridge, which is in immediate contiguity with the roadway, and consequently subject to more shock from the traffic, would be of the safest material. Between the main ribs cross girders and beams, 8′ 6″ apart, would be fixed, and on them are intended to be laid wrought-iron buckle-plates, with water-tight elastic bed to receive macadamizing and ballast of roadway. Footpaths are proposed to be of granite, of large sizes and hard quality, or of thick Valentia slabs. As to the embellishments, we have introduced the City of Dublin arms and motto in the spandrils, with the Irish harp and the shamrocks to fill up the spaces, all carried out in open work. The pattern in the balustrade, and the arrangement of pedestals on abutments can be altered if desired. The cast metal kerbing, with roughed gutter and drains, will be useful as well as sightly, and we have kept the lamps on the edges of the footpaths, as best for lighting."

The second design which we illustrate is by Messrs. Lanyon, Lynn, and Lanyon, and comprises two spans each 58 feet in width. The centre pier has a figure of 'Anna Liffey' with a harp, sitting on the offset or starling, and is surmounted by a campanile, 7 feet square on plan, and rising about 22 feet above roadway, having statue in niche on each face, and high-pitched panelled stone roof, terminating with acorn vane. The spandrils of the bridge-arches are panelled and sculptured; parapet balustraded, and with frequent piers —that midway sustaining triple lamps. At abutments rise larger campaniles, 14 feet square, and about 46 feet high above roadway, the first stage having Corinthian columns and antæs (with entablature over), and intermediate niches with statues on each face. At the angles of main cornice are urns, and from this level the plan becomes octangular, an open structure, with arches on each face, and capped with roof corresponding in character with that on central pier, surmounting the whole; its connexion with the square basement being cleverly and tastefully treated; with pedimented and circular panelled projections and garlands of flowers. Four or five winding steps in each abutment lead to urinals, &c., which would be placed in each campanile, the very positions to which such conveniences are so suitably adapted. The steps are introduced for the purpose of making the entrance more private, to keep the top of the entrance opening as low as possible (so as not to interfere with the niche over), and to prevent any offensive drainage from the interior on to the footpath. This arrangement is one which, we doubt not, will be highly approved in connection with the planning of the bridge.

As the law now stands, the bridge must be built under the inspection of the Port and Docks Board, and their able and intelligent engineer. The funds are to be provided by the assessment of a tax on the city and suburban districts for, it is calculated, a period of twenty years. We hope that the matter will not be allowed to slumber for another "hundred months!"

ORNAMENTAL IRONWORK.

Messrs. Brawn and Downing, art metal-workers, Birmingham, have favored us with a photograph of an elaborate pair of gates just turned out by them for Earl Manvers. For a description we are indebted to the local *Gazette*, which tells us that this firm "has entered boldly into the spirit of metal-working on mediæval principles, and by taking advantage of its ductile and fibrous properties, and the facilities it affords when heated for the operations of the hammer-man, they have produced some examples of ironwork for external decoration which, as regards design and execution, show that the modern skilled ironsmith is as much an artist as the metal craftsman of a former age. The most recent specimen of this high-class work executed by the firm is a pair of gates for Earl Manvers, intended for the entrance to the courtyard at Thoresby Park, Nottinghamshire, where a considerable quantity of wrought-iron park railing of similar character is now being erected. These gates measure 21 feet in width from the outside of the piers, and are between 17 and 18 feet high. The gates themselves are 16 feet wide, the piers being 2 feet 6 inches in width each. The piers are of wrought iron, the work being solid and durable, and presenting a far better appearance than stonework or other material. The piers will be surmounted with large lamps in wrought iron, of similar design. The gates will run on quadrants, and thus be capable of being opened and closed with the greatest ease. The framework is heavy and substantial, which gives (in contrast) the ornamental ironwork itself a light and graceful appearance. The style is that of the Renaissance period—a style which, in ornamental metalwork at all events, is rapidly superseding the Gothic. The flowers and foliage, spike and stem, leaf and blossom, are beautifully wrought—all hammered, forged, and welded, without screw or rivet throughout." The cost, we understand, was about £700.

THE ROYAL DUBLIN SOCIETY.

The Monthly Scientific Meeting of this Society was held on the 23rd ult., in the Lecture Theatre of this Society, Kildare-street,

Professor Dwyer in the Chair.

Mr. Robert S. Ball, M.A., gave an interesting account of "Experiments on the Mechanical Efficiency of the Differential and Epicycloidal Pulley Blocks." Having referred to the various systems used for the raising or carrying of weights beyond 1 cwt., which he said the majority of the human race could manage with ease, he described at considerable length the differential pulley as first introduced from China, where it had been used for several ages. It was worked with an endless chain passing over a disk, with two grooves of unequal circumference, and plying through a block supported below. Every revolution of the disk raised the block one inch, and the agent was one of the most powerful which had yet been discovered for dealing with immense weights. There was, however, one question not sufficiently considered in relation to all mechanical apparatus of this kind, namely, friction, which very materially diminished the power, and should always be taken into account. This objection was least observable in his opinion in that description of pulley to which he gave a preference. He then explained a drawing of the differential pulley, and was subsequently thanked for his instructive address.

Dr. J. Emerson Reynolds submitted a series of mineralogical classifications in tabular form, arranged specially as a guide to the extensive mineral collection of the society.

Some interesting exhibitions, consisting of crystals of minerals by polarised light; a new form of thermo-electric pile; and a new form of electric telegraph, were made, after which the meeting adjourned.

BALHEARY ROMAN CATHOLIC CHAPEL.

[communicated.]

The above chapel (the foundation-stone of which was laid some time since by the Right Rev. Dr. Grimley) has been resumed after a pause of several months during the winter season. As the funds for its completion are very low, and the sacred edifice being very much required, the committee earnestly appeal to a benevolent public to assist them in their undertaking. As was stated on the event of his grace laying the first stone, that the old building is the last of the thatched chapels in the diocese, and as it was entirely too small for the congregation attending it, he was quite sure the public would kindly respond to the call made upon them, and thereby assist in the great work of erecting so befitting a temple to the Creator. The members of the committee—Messrs. Bride, Fitzpatrick, Harford, and Ennis, including the chairman, the Rev. Father Supple, P.P.—will be most happy to receive subscriptions. The works are being executed in a satisfactory manner by Messrs. W. Conolly and Son, of Upper Dominick-street, under the superintendence of Mr. J. Kiernan, architect, Swords.

DOMESTIC ARCHITECTURE, AND BUILDING MATERIALS.*

I FEEL considerable diffidence in submitting my—probably very ill-formed and mistaken—notions on "Domestic Architecture" to so learned a body as the Royal Institute of the Architects of Ireland. It is, I admit, somewhat presumptuous for a person totally unconnected as I am with any department of architectural science, to write upon a topic so purely professional as that which I venture to bring under your notice this evening. Yet, as every educated person feels, or at least ought to feel, an interest in architecture, it is perhaps allowable that the layman should occasionally express his views on the subject; were it for no other purpose than that of paying a tribute of admiration to that glorious art which has studded the earth with the most enduring and beautiful memorials of man's intellect and greatness.

There is no lack of materials for the writers on British Architecture, both ancient and modern. In the manuscripts of very early ages we find both descriptions and illustrations of buildings—ecclesiastical, military, and civil; and the country is rich in archæological remains from not only Roman, but even prehistoric periods. We possess, in short, a very extensive knowledge of the various forms of architecture which prevailed in these countries since their inhabitants first emerged from the condition of the savage.

During the Roman occupation of England and part of Scotland, the towns resembled those of Gaul and Italy,—in fact a Roman town possessed the same essential features whether it was situated on the banks of the Danube or the banks of the Thames. After the Saxon conquest Roman architecture gradually disappeared from England. The people lived in small thatched huts, possessed of the very simplest forms, and utterly devoid of any pretension to architectural style. The houses of the theynes, or chiefs were larger, but in other respects not much superior to those of the lower classes; probably they were ornamented with some rude carvings in wood, for the ships, or galleys of the Saxons, Danes, and other northern people were often elaborately carved.

After the conversion of the Saxons to Christianity, the houses—at least some of them—began to be more pretentious in style, and so early as the seventh century they unquestionably erected some ecclesiastical edifices in stone, and in the style termed Romanesque. At this time the houses of the kings and nobility appear to have been also frequently built in the Roman-like or Romanesque style. Drawings taken from illuminations in ancient MSS. are given in the 24th volume of the *Archæologia*, which clearly prove that in the eighth century houses existed of no mean architectural pretensions. The roofs were conical, the light was admitted through square or round-headed windows, and the columns which supported the roof were ornamented with carved capitals, and connected by circular arches.

The Normans, like the Saxons, built substantial stone houses, but the great majority of the people of both nations dwelt in mud—clay or wooden huts even when located in the larger towns. The dwellings of the wealthy in the twelfth century were often rude and ugly enough, but occasionally highly decorated buildings were erected. The author of that invaluable work, "The Domestic Architecture of England," has given us (vol. i. page 41) an engraving of "The Jew's House," Lincoln, erected or existing in the twelfth century, which shows, that in some instances at least, highly decorated and in every way handsome dwellings existed at that early period.

From the twelfth, to the fifteenth, century there was a gradual improvement in the architecture of towns; the houses were chiefly built of wood, but their doorways, windows, and corner posts were frequently highly decorated with carvings. The fronts of the stone houses were also often highly enriched with panelling. In this century the bay window, which had been introduced during the latter part of the preceding one, became very general. From this period until the early part of the seventeenth century the street architecture of the towns of these countries was remarkable for its highly decorative and picturesque character; and the public buildings were, with few exceptions, Gothic, of more or less purity in style. In the sixteenth century the revival of classical learning unfortunately led, as I think, to a taste for. classical architecture. The spirit of Gothic architecture, which had been declining for a century, vanished. The public buildings which were erected in London after the great fire of 1666 were altogether Classic or Renaissance. As the fine old Gothic houses gradually decayed, their places were supplied with plain brick or stone dwellings; and for nearly two centuries the dwellings of the people were becoming uglier and uglier, until about the latter part of the last century the very zero of architectural debasement was reached. In London, Dublin, and nearly all the other large towns of these countries we find street after street displaying the same dull, heavy, bare, monotonous aspect. No broken skyline, no carvings or traceries of any kind to afford some relief to the weary eye. Let anyone stand at the corner of Lower Fitzwilliam-street in our own city, and look down the north and east sides of Merrion-square: he will see simply two long dirty brick walls, provided with oblong holes for the admission of light. This specimen of street architecture (if it can be termed street architecture at all) is in the most fashionable part of the city, but it is the type of nearly every street and square in modern Dublin. In the older parts of the city we have still good, though decayed, examples of a better style of domestic architecture. In several streets within the district termed the "Liberties" there are houses with peaked and highly-ornamented gables turned streetwards, with rich window dressings and handsomely-carved doorways. In many Irish provincial towns we find even better examples of the good taste of the architects of the sixteenth and seventeenth centuries in the building of their dwellings. At Kilmallock there is a row of houses in the principal street built in the Elizabethan period. They are highly ornamented, are built on a uniform plan, and are, in beauty of outline at least, immensely superior to the average street houses of the last and present centuries. In Galway, too, we find very fine examples of the houses of the sixteenth century. The house of Lynch, the famous warden of Galway, existed until a comparatively recent period; it has been rebuilt, but some of the carved work of the older edifice has been inserted in the new structure. This carving, though executed in the time of Henry VIII., is still exceedingly beautiful, and it testifies to the artistic skill of the Irish workmen of the sixteenth century. I was much surprised, indeed, when I first saw the carvings of the time of Elizabeth which still ornament so many of the houses in Galway. On many of the doorways there are as corbels heads finely carved in hard stone, and the hair depicted with a sharpness which time has but little blunted.

I am free to admit that modern houses are, as a rule, more convenient, are better lighted, and more thoroughly ventilated, than the dwelling-houses of the sixteenth century; but they are utterly wanting in the æsthetic features which so highly characterised the latter. There is nothing to prevent a house from being very convenient and very handsome at the same time. The people of these countries are far richer now than they were three centuries ago. They spend more money on food, on dress, on amusements; then why not expend more money in beautifying their houses? When the London or Dublin merchant of the sixteenth century could afford to build a beautiful city house, surely the merchant princes, the wealthy manufacturers, and the rich tradesmen of modern times might well expend the small requisite to beautify their offices, factories, and warehouses, and their dwellings too. There is little, if any, difference between the style—let us rather say form, for style is utterly wanting—of the houses of the very poor and those of the very rich. There are hundreds, nay, thousands, of houses in Dublin and its suburbs which have each cost more than a thousand pounds in its erection, but which are as devoid of architectural ornament as the wigwam of a North American Indian. There ought to be some word to designate the work of the mere builder, so as to distinguish it from that of the architect. It is absurd to use the term architectural in connection with the masses of brickwork which constitute the average street houses of this city. As builders' work they may possess considerable merit; but as they are devoid of outlines upon which the eye might rest with pleasure, and have not the beauties of color to atone for the absence of solid ornamentation, they do not deserve to be termed the work of the architect.

Dublin is a comparatively poor city; and, having but few nobility and landed gentry residing permanently in it, the only handsome modern houses erected in it are insurance offices and warehouses. The dwellings of private individuals erected during the present century are generally of a very unpretentious character, and somewhat small. Under these circumstances we cannot hope—for some time to come, at least—to see springing up in our fashionable quarters and suburbs such large houses as those erected in the last century. Such houses, however, as we do build might certainly be made more architectural than is the case. It may be said that a handsome house costs more money than a plain one of the same size: this is quite true; but I insist that the difference is not so great as to warrant people erecting large houses of exactly the shape of a pigeon-box. I know a gentleman who some time ago resolved to get a dwelling built for himself. He consulted an architect, who, being a Goth, suggested a Gothic design. My friend, however, was, in the matter of architecture at least, a Vandal. He would hear of nothing but a plain brick front to his house: everything in the shape of an ornament to the exterior of a private house he regarded as gew-gaws, if not vulgarities; and was firmly convinced that the *ne plus ultra* of respectability was a brick house shaped like a cube, decorated (?) with smooth monolithic window sills, a heavy granite parapet, and a classic face on the door knocker. This house cost £3,000 and the furniture £2,000—a total of £5,000. Now the sum of £200 added to the cost of this house would have made it a really handsome structure. Here we have the case of a wealthy man building an ugly house, not because he saved thereby a paltry sum, but because he had not the good taste to be able to appreciate the beauties which the educated eye found in form and color. After all, my friend was but the type of a class, and by far the largest class, of society. The public at large care very little what the outside appearance of a house may be, provided the interior be roomy and comfortable. I repeat, then, that it is not altogether because Dublin is a poor city that its domestic architecture is so mean, but because ninety-nine out of every hundred of its citizens have no taste for architecture; with their notions of a dwelling they associate no other idea than those of comfort and convenience. It must, however, be admitted that a better state of feeling is gradually making way amongst the people of Dublin, and amongst the inhabitants of all the large cities of these countries. Here and there in our streets we find a highly and correctly ornamented building springing up—oases, so to speak, in the architectural desert; one can, indeed, hardly doubt but that a real revolution in the architecture of towns has set in. It is the architects of Dublin to whom we are solely indebted for the recent marked improvement in the style of Dublin houses. Since the revival—thanks to Ruskin and Pugin—of a taste for Gothic architecture, Dublin has produced a school of architects of whom it may feel justly proud. These gentlemen have successfully overcome the old-fashioned prejudices in favor of unornamental dwelling-houses, shops, and offices; and they have persuaded their clients to allow them to erect structures upon which the beholder might gaze with pleasure.

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* Read at Ordinary General Meeting of the Royal Institute of the Architects of Ireland, May 19th, 1870, by Professor Charles A. Cameron, M.D., Honorary Member.

I now approach that part of my subject upon which I cannot speak *ex cathedra.* I venture to claim the privilege of freely expressing my opinion upon some of the æsthetical points in connection with architecture. It may be permitted to a layman to say that he admires a Gothic building more than a classical structure, and that he prefers a Classic building to one that is neither Gothic nor Classic; but the layman is not expected to know anything as to the relative costs of building in the different styles of architecture. I have no pretension whatever to the possession of a knowledge of the prices of building materials, and the relative expenses in fashioning them into the necessary shapes; but I think it may lead, perhaps, to an interesting discussion amongst the professional gentlemen present if I advert to this subject.

I believe some architects assert that in many localities a house can be built in dressed stone as cheaply as in brick; on the other hand it is stated that even at such places as Edinburgh, where abundance of fine and easily-workable stone is found, a brick house costs less than a stone one. Brick is an excellent building material, and, in a sanitary point of view, a most desirable one, as its walls, when dry, permit the passage of gases and watery vapor. A brick front is not, however, so sightly (to my eye, at least) as a stone one; and if good stone could be as cheaply employed in Dublin as brick, I would certainly give the former the preference. We have excellent granite in the neighbourhood of Dublin, and I would be glad to see it more frequently employed in the construction of the better class of houses. As it is, granite is very frequently used in building the basement and first stories, and occasionally even the second storey is constructed of this material. Five houses in upper Fitzwilliam-street are built altogether (at least the fronts are) of cut granite. I am informed that the difference between the cost of erecting one of these houses and building a house of the same size with the first storey only in granite was not five per cent. in favor of the latter.

I do not see why granite rubble should not be generally used in domestic, as well as it is in ecclesiastical, structures. It is said to make a damp wall, but I think, if the rough surfaces of the stones be embedded in a thick (instead of, as is commonly the case, a thin) layer of mortar, that granite rubble would make a dry wall. In an æsthetic point of view, granite, when old, is inferior to Portland and some other stones, as fine shadows are seldom produced upon it by time's artistic brush. An old granite house-front is, however, not wanting in beauty, whilst an old brick front is never wanting in ugliness.

Ireland is rich in limestones, many of them admirably adapted for building purposes. The impure argillaceous limestone termed calp is sometimes employed by the builder, but I know of no more undesirable material. I think the municipal authorities should be empowered to prohibit the use of so ugly a building stone within the urban limits. A very fine limestone is found at Milverton, near Skerries. When well worked up, it possesses a beautiful soft bluish hue. I admire this stone greatly, and hope to see it yet largely in use in this city. The office of the Scottish Equitable Life Assurance Company, Westmoreland-street, is built with this stone, and to my mind there are few buildings of the kind in Dublin which can favorably compare with this structure, notwithstanding its want of width in proportion to its height. This stone is rather expensive, costing, I believe, from 1s. 3d. to 1s. 8d. per cubic foot; and when dressed from 4s. to 6s. per cubic foot. I notice that a very fine bluish limestone has been employed in building the new premises of Messrs. Smyth and Son, Stephen's Green, North. This stone was obtained from Mr. Doolin's quarries, Ballinasloe, and his brother, Mr. Wm. Doolin, of Gt. Brunswick-street, informs me that it can be delivered in Dublin in the rough state at 1s. 4d. per cubic foot. It is a very handsome stone, and I hope to see it come largely into use. A mixture of this kind of stone and good granite would have a fine effect. It is a pity that the expensive structure recently erected by the College of Physicians was not built, I believe, of such materials instead of the imported stone, which is already exhibiting symptoms of decay. It strikes me that we neglect to use good home-produced materials, and substitute therefor inferior exotic articles. There is a moderate-priced, very durable, and well made red brick manufactured in the North of Ireland, which is seldom used in Dublin—a city in which there is a large demand for English-made bricks.

When bricks are employed in building houses, poly-chromatic decorations might be effectively employed. Red bricks present a comfortable and warm appearance, cheering in our damp climate, and they render somewhat less depressing the effects of our gloomy, sunless days. A red brick front ornamented with bands of well dressed blue limestone, and having cut stone dressings, would look very handsome and cheerful, especially if the materials were fashioned into pleasing forms. Terra-cotta moulded capitals, quoins, corbels, and other dressings have recently been introduced: I think they are chiefly manufactured by Boulton and Watt. They ought to be largely used in the ornamentation of brick houses, for I see nothing anti-Ruskinian in the use of such decorations.

Plaster has been abused so much that I hardly like to say a word in favor of compo. I do not myself care much for plaster on the fronts of houses, but I prefer a cemented and well-painted house front to a dirty-looking brick front. Of course I have not a word to say in favor of the common process of painting plaster in imitation of stone; the practice is about as commendable as that of palming off pinchbeck for gold, or paste for diamonds. I think, however, that a well-painted wall is a sightly object, though in the long run it will be found much more expensive than a cut stone one.

I have a taste for Gothic houses, and even for furniture constructed on Gothic designs. I should like greatly to see the domestic architecture of this city become Gothic. I fear, however, that in some instances Gothic houses are not very comfortable ones. The fireplaces invented by our ingenious mediæval ancestors were admirably adapted for transmitting nearly all the heat produced in them up the chimney. Probably fuel was so cheap and abundant in those ages that a wasteful combustion of it was a matter of little moment; but as fuel is now so dear, could not correct Gothic fireplaces be so constructed as to radiate the heat into the apartments they are intended to warm? In moderate-sized houses, where the bedroom accommodation is limited, the roofs might not be made so very steep, for the sleeping apartments which form the upper storey of a Gothic house are generally very cold in winter and very warm in summer. Some persons are under the impression that in Gothic houses the windows should be very small, and provided with diamond-shaped panes, through which only a "dim religious light" could penetrate. I am quite sure that, when people find that they can get comfortable and well-lighted houses built, the taste for this style of architecture will become far more prevalent. The decorations, too, of Gothic structures are essentially of a nature to become popular with the people of these countries, simply because their symbolism is easily understood. "Do you seriously imagine, reader," says Mr. Ruskin in the first volume of his "Stones of Venice," "that any living soul in London likes triglyphs? or gets any hearty enjoyment out of pediments? The Greeks did; English people never will. Do you fancy the architect of old Burlington Mews in Regent-street had any particular satisfaction in putting the blank triangle over the archway instead of a useful garret window? By no manner of means. He had been told it was right to do so, and thought he should be admired for doing it." In Dublin, let us hope that in the future neither the architect nor his client will feel much enjoyment in the contemplation of either triglyphs or pediments, but that both will be animated with a love for those forms of buildings which are adapted to the genius of the people and the climatic conditions of the country.

In conclusion, I would venture to make the following suggestions for the improvement of our street architecture:—

1st. The adoption of the Gothic style, plain or ornamental, according to circumstances.

2nd. The use of cut stone in the case of houses where the element of expense is not a primary consideration.

3rd. The use of rubble masonry with cut-stone dressings in the construction of dwelling-houses.

4th. The employment of terra-cotta dressings in the case of brick houses.

5th. The erection of blocks of houses on a uniform plan, but not of such dimensions as to render their details monotonous.

6th. The placing of the gables of all kinds of houses so as to face the street.

7th. A total reformation in the mode of building that part of the chimney-block which projects above the roof, the existing chimneys being, with few exception, extremely unsightly.

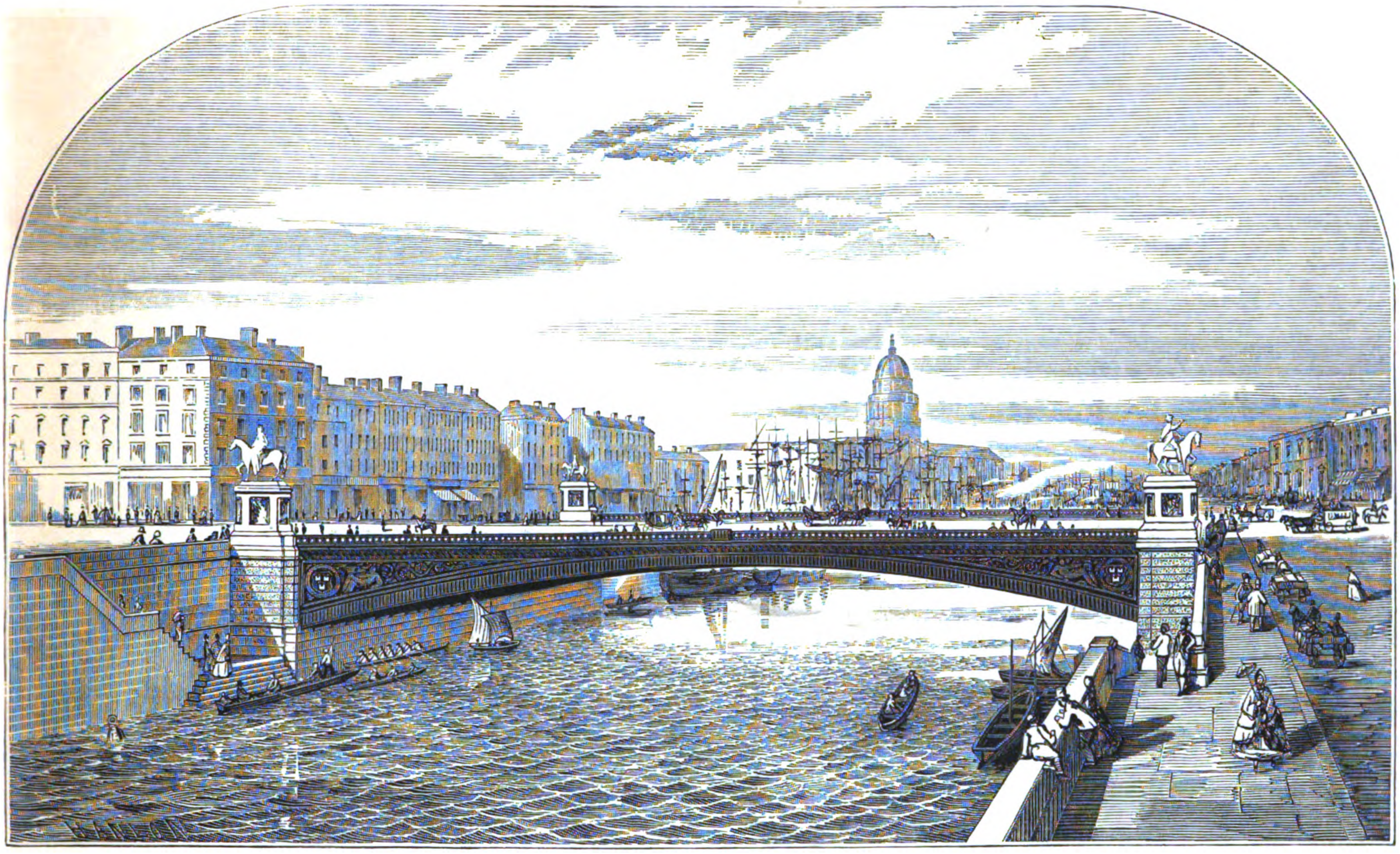
And now it remains for me but to thank the Institute for their kindness and indulgence in listening to my crude observations upon a subject so familiar to them, and which, indeed, I feel it to be almost an impertinence upon my part to bring under their notice.

NOTES OF AN ARCHITECTURAL TOUR IN ITALY, IN THE AUTUMN OF 1869.

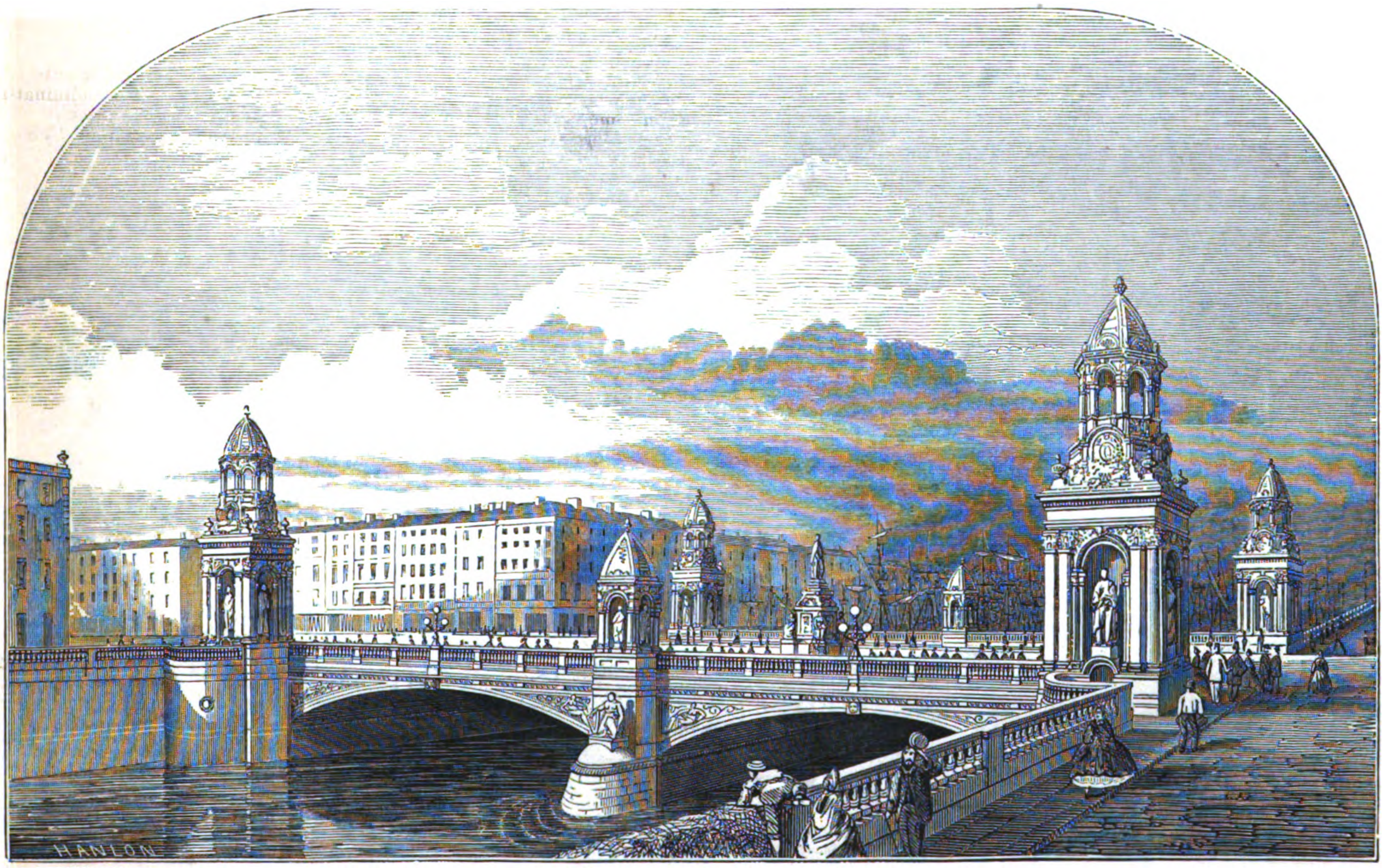
(Continued from page 120.)

Mr. Wood, in his very interesting "Letters of an Architect,"—a book which, though now generally looked upon as out of date, I commend to every architectural student,—describes how it took him a vast deal of trouble and no small risk to get from Rome to Naples in four days. This journey, or the reverse, is now performed in about 12 hours, at the end of which we found ourselves coming into view of the dome of St. Peter's, the culminating point in every distant view of Rome. The desolation of the country around Rome is very remarkable, and reminded me of the aspect of the barony of Burren, in the County Clare, "a stony place where there is not much earth"; but, I believe, in salubrity the Irish barony has the advantage. In various directions huge aqueducts are seen stretching for miles, with countless arches, indicating the care with which the water supply of the Imperial City was attended to by the emperors; and as we come still nearer, inscriptions on these and on other monuments in large letters tell how "Gregory XVI., Pont. Max.," or "Pius IX., Pont. Opt. Max.," have at different times repaired, expurgated, and blessed these monuments of Pagan times. The railway terminus is but temporary as yet, and very squalid looking; let us hope that in proper time a structure more worthy of the ancient mistress of the world, and instructress in architectural and engineering art, may be erected. After a short drive, during which numerous august and interesting objects are passed, we fix ourselves for a brief space at the classical hotel of Minerva,—a very excellent establishment, in the centre of the city, with a noble saloon decorated with arabesques of very high class, and, like many other hotels and public institutions, evidently at one time the palace of some of the ancient nobility. We soon, however, found most reasonable and comfortable lodgings, and in respect of creature comforts as well as intellectual delights, thoroughly enjoyed our stay in the Eternal City, as we did the whole of

COMPETITION DESIGNS FOR NEW CARLISLE BRIDGE.



MESSRS. TURNER AND PAGE.——FIRST PRIZE.



MESSRS. LANYON, LYNN, AND LANYON.——SECOND PRIZE.

our tour. I do not know why the guide books should speak so disparagingly of mine hosts the Italian innkeepers, except it be because they are not so fixed in their charges as not to be accessible to a reasonable offer; and bearing in mind that even the highest prices asked by the Italians are low in comparison with those charged at our hotels, this ought rather indicate their accommodating disposition. We really found them almost invariably civil, attentive, and very reasonable in their charges, and we certainly could not have travelled in these islands at anything like such a moderate expense.

One of our first visits was to St. Peter's and the Vatican. Having well studied the history and architecture of that august pile, and being well aware of its defects as well as merits, I cannot say the exterior proved much different from my expectations. The magnificent semicircular colonnades, with the fountains and obelisk forming the piazza in front, present a scene of architectural grandeur not to be surpassed, and only equalled, to my mind, by the view in all directions from the Place de la Concorde at Paris. The façade, colossal though it be, disappoints, its composition and detail being poor, and the material, travertine, very rough and patchy. In fact Italy, though rich in marbles, does not seem to be well supplied with good building stone, most of the building stones in use seeming not to admit of delicate carving. If it were not for the smoke and soot which have discoloured our St. Paul's, and the neglected state of its surroundings, its exterior would not suffer by comparison. The immense transverse vestibule first entered is a very noble feature of frequent occurrence in the large basilicas of Rome, and well deserving of imitation in our large public buildings, where indeed the necessity for such a space is much greater. It is rather remarkable, on studying the façade of this great church and the others in Rome, how little the great architects of the revival seem to have cared for the classic peristyle. If there is one feature more than another in which classic architecture excels, it is in the porticoes of detached columns and pediments, of which so many examples exist at Rome, and which the French and English classicists have reproduced rather too often. No finer example need be looked for than the portico of the Pantheon, the dome of which attracted so much the admiration and emulation of Brunelleschi, Bramante, and Michael Angelo; but yet they seem to have preferred using engaged columns or pilasters instead of detached in all their buildings. I believe Michael Angelo's idea for the front of St. Peter's did embrace such an idea, but it was overruled by his successors, and with great sacrifice of dignity and effect. Except in in some two or three comparatively insignificant churches in Rome, there is not to be seen any modern classical portico of detached columns, and these bear no comparison with the ancient works, or even with the numerous able reproductions of them by the French and English classic school.

Just before entering this sumptuous temple one more idea strikes us, which, as it embodies a practical suggestion, ought to be unreservedly expressed. The doorways of most of the Italian churches are very fine, both in the architecture of the openings and in the filling. The proportions are generally noble in the highest degree, and the amount of art displayed on the doors is such as often to justify the remark of M. Angelo, made with reference to the celebrated Ghiberti Gates of the Baptistery at Florence,—"that such doors were fit for the gates of Paradise." But then these magnificent doors are never used, but an opening of about a fourth or sixth of their size made at one corner of them, letting us into a dark and dirty box, where we feel somewhat like a rat in a trap, until at last we find one side of this box to be a thick mattress covered with leather, black and grimy as can well be imagined; and by a vigorous push against this we gain entrance, running a great chance, however, of knocking any one down who may be coming after by the force and weight with which the mattress swings back. These entrances are simply a disgrace to the noble churches to which they are affixed, and it will be a good day when some Pontifex Maximus, by a bull or decretal, or other proper order, does away with them.

Once within, however, every sentiment but the highest admiration fades away. The vastness of the dimensions, the just proportions, simplicity, and unity apparent in the design, and the warmth and life given by the decoration, colour, and gilding, produce an impression unequalled by any other building in the world, and far exceed the highest anticipations formed. I cannot stop to criticise, or notice the criticism of others; a good deal of it is simple "twaddle." The interior of St. Peter's is undoubtedly one of the highest efforts, if not the very highest, that architecture and the sister arts are capable of; but even the architecture of heaven itself will not bear the application of such rigid rules as some of our modern art-critics lay down. The best way to silence some of these is simply to ask what they admire, or let us see something designed in accordance with their principles, when the result is generally something so tame and spiritless, or else so *outré* and barbarous as to need no criticism to show its utter absurdity.

Pugin, an undoubted genius, enthusiast, and devoted adherent of the Roman Catholic Church, to join which he had incurred no mean sacrifices, was grievously disappointed at Rome. Why? Because all his art creed was embodied in the theory that Gothic architecture alone was Christian, all else being merely Pagan, and his view of Christianity could only recognise the Roman Catholic form of it; and these two positions were irreconcileable with the fact that in the centre and stronghold of the Roman Catholic Church Gothic architecture has never made a footing; and, on the contrary, that city has been beyond all others the fountain and headquarters of classicism and the classic revival. Had he only opened his eyes and his understanding he could never have stated so monstrous a proposition. In the first ten centuries of the Christian era, embracing the period during which Christianity achieved its widest conquests, Gothic architecture was unknown, and neither in the vast districts embraced by the Eastern church nor yet in Southern Italy did it ever make any perceptible advance. Christianity and art are both too enlarged and comprehensive things to be tied down by any such rules, arrived at simply by reasoning from particulars to generals. The one can enlist in its service every form and style of art, and the other can be made to serve and illustrate every form of religion.

Among the host of works of painting and sculpture of the highest class with which St. Peter's is filled, the mosaics deserve notice, as certainly a most brilliant and enduring form in which to apply the works of the great masters to the decoration of buildings; but it is questionable whether the end attained is at all commensurate to the labour and cost bestowed.

From St. Peter's to the Vatican, ascending another of those noble staircases before referred to, and many days might be spent traversing its museums and galleries, where the art-treasures of the greatest empire of antiquity are collected. So long as these magazines of antique sculpture remain where they are, Rome must be the chosen home and resort of the professors and students of that art, for they exhibit the nearest approach to perfection we see in anything human; and even the most bigoted mediævalist cannot but admit that the choicest sculpture of the Gothic period is almost semi-barbarous by comparison. In fact, it can hardly be questioned that Gothic sculpture, like Assyrian and Egyptian, never got free from conventionalism. It is only in Greek and Roman sculpture that the art appears fully developed—free from trammels, and able to achieve its results with a completeness and fidelity not to be found in the works of the other nations or periods referred to.

A visit to the Sixtine Chapel was, I must confess, disappointing to me, after all I had heard and read of its magnificence. It is simply a large rectangular hall, with scarcely any architectural features, but every square foot of surface covered with paintings in fresco, chiefly the works of Michael Angelo, whose "Last Judgment" occupies the whole of the altar end. These, like nearly all the frescoes I have ever seen, are much damaged, but I doubt if even at their best they can have been satisfactory in effect. I doubt very much if the great artist would have selected this mode of decoration had he been left at liberty to choose. Nothing more different from the interior of St. Peter's can well be conceived. The paintings may be, and no doubt are, triumphs of pictorial art; though in order to look at those on the ceiling especially, one has to twist and turn into all manner of uncomfortable attitudes; but if so, it was a pity they were ever applied in such a manner. It is certainly making too much of one art, to the exclusion of its sisters, to require that painting alone should be used in the decoration of this chapel. At St. Peter's we see painting, sculpture, and architecture united in proper relation, and the effect is so much the more satisfactory. The vast picture of the "Last Judgment" at the Sixtine Chapel is cut into by the canopy over the altar. The seats and fittings are of the most temporary and shabby description. Altogether, it contrasts most unfavourably with some of the magnificent chapels royal of Gothic times, such as the Sainte Chapelle at Paris, St. Stephen's, Westminster, or St. George's at Windsor.

A comparison of the architectural antiquities of Rome with the modern revival, of which also Rome was the head quarters, leads clearly to the conclusion that in the first few centuries of the Christian era the art attained its culminating point of excellence, and then began to retrograde; not because the resources of the style were exhausted, or that all had been done in it that it was capable of, as some would have us to believe; but because that the nation had declined in taste and knowledge, or else public attention was directed from the study and practice of art to other concerns. A comparison of the three triumphal arches of Titus, Septimus Severus, and Constantine reveals this very fully. When this retrogression ended, as it did in the complete overthrow of classical art, and after the lapse of centuries Brunelleschi, Bramante, Michael Angelo, and the other great masters inaugurated the revival; it was simply because that at that period Rome was again a centre of power, wealth, and intelligence, and could not rest satisfied without a higher class of architecture than had prevailed during the middle ages. These great artists did not choose for their models the inferior works of the later empire, but tried to seize on classical architecture at its point of highest excellence, and to carry it on from that point to still greater heights. And in that effort who can doubt but that they succeeded, and produced works such as would gladden the soul of old Vitruvius could he only be permitted to gaze on them; fully recognizing his principles, but carrying them on far beyond anything he ever dreamt of? And yet these men are denounced now-a-days as producing "the pestilent art of the Renaissance"; and the noble works they left behind are pooh-poohed as dull, effete, and no knowing what else. Our own Anglo-classicists, Jones, Wren, Vanbrugh, Chambers and Gibbs, have not been unworthy of their confreres in Italy; and if their buildings were only enriched and illuminated with a little of the painting, sculpture, and gilding in which the Italian works are so rich, they would not suffer by comparison. The French have had a Renaissance of their own, in which, while the same classic principles are recognized in which the Italian artists worked, a thoroughly national feeling has been infused into it, such as to produce a really national style, which is in no danger of being upset by the Gothic revival also recently commenced there, and which we can hardly hope to rival. I believe the modern Gothic revival in this country will best be maintained and carried on by acting on the same principle, *i.e.*, to select the most advanced and purest type of Gothic as our model, and see if we can make further advance on that, adapting it to modern uses, and availing ourselves of all modern improvements. Instead of which it seems too much the fashion to ring the changes on every different phase of Gothic, and seek for novelty by simply imitating some type of it not so much used up as the others. For instance, first we had the Perpendicular style in vogue, becoming full blown in the Houses of Parliament; next the Early English and Decorated, with Norman now and then for variety; then we had a burst of Italian Gothic, Lombardic, and Early French. When all these varieties are exhausted Spanish and German Gothic may have a trial, and then let us hope the English Gothic of the fourteenth century may be found to be what it really is, the most perfect and suitable development of the pointed style yet seen in these countries, and that it will serve as a basis on which to work, availing ourselves of every element in the foreign styles deserving importation, but still adhering in the main to our original basis, only seeking to improve and develop upon it as best we may.

The glories of the Pantheon, the Forum, the Coliseum, and other stupendous works of the ancient Roman time have been already fully descanted on, and these buildings are all beautifully illustrated by Piranesi and Desgodetz, as well as by our own countrymen Taylor and Cresy. A short glimpse of the excavations on the Palatine, undertaken by the present Emperor of the French, showed some of the chambers of the ancient palace of the Cæsars, very similar to those of the houses at Pompeii. It seems scarcely possible to excavate anywhere in or about Rome without lighting on some objects of interest attesting its past magnificence.

The churches of Rome may be roughly divided into two classes—the basilican, nearly all dating long previous to the Renaissance of the fifteenth and sixteenth centuries, and the domical, nearly all erected since. The first-named preserve in their form the most ancient type of Christian church, often constructed out of the materials of the Pagan temples, but most of them have been restored and enriched at subsequent periods. They are nearly all rich in mosaics, and other works of early Christian art. The arrangement is in several important respects very different from that which mediæval ecclesiologists engrafted on it, the altar or communion table being nearly always detached, standing in the centre of the apse, and the latter occupied by seats for the clergy, the chair of the bishop or other cleric of highest rank being in the centre. The roof of the nave is almost always flat, and the clerestory walls are carried either on arches or a horizontal entablature. Many of these churches seem to have been finished externally at one time in the round arched style, chiefly in brick, which we are accustomed to call Romanesque, and to have had campaniles of considerable height, of which a great many remain; but the architecture of the rest of the church has generally been overlaid or altered in later times so as to be scarcely discernible. The basilica of St. Clemente contains an atrium in front like that of St. Ambrogio at Milan, and so do several others; and this church has recently been discovered to be built over another and older one containing some curious frescoes, an account of which has been published by the superior of the order to whom the church belongs, the Rev. Father Mullooly, I need hardly say a countryman of ours. The basilica of Sta. Agnese fuori le Mura is remarkable as having two orders of columns between the nave and aisles, and a gallery on three sides, and is very much the type and proportions on which Sir C. Wren built many of his best churches. Why the use of galleries in churches should be now-a-days absolutely condemned, when they are often so useful and even essential for the accommodation, I cannot understand. I think it is simply because so many of our ultra-Gothicists find themselves utterly unable to solve the problem of introducing them without spoiling the church; or, in other words, because they are capable only of imitation, and cannot go one step beyond what the Gothic architects of the middle ages have accomplished. The basilica of St. Lorenzo is remarkable, as it seems at one time to have possessed an atrium, which, being roofed over, became the nave of the western division of the church, the original nave remaining as a choir. While using this term western I forget that in Rome, and indeed elsewhere throughout Italy, the orientation of churches seems to be wholly disregarded, and I only use it for convenience, as we are so accustomed to consider the apse or altar end the east. It is pretty clear that the idea of turning a church to the east only prevailed in Northern and Western Europe, and never at Rome or in the Eastern Church.

But besides these basilican churches interesting for their antiquity, some of the most important of them have been maintained and added to with great magnificence, and enjoy peculiar privileges. Amongst these the three principal are St. John Lateran, Sta. Maria Maggiore, and St. Paul's, without the walls. The first is connected with the huge palace of the Lateran, and is very magnificent inside, the effect, however, not being quite so fine as if the columns were detached. The fronts are of more recent date, and great pretension, as will be seen from the photograph. The Corsini Chapel at one side of this basilican, and the Torlenia Chapel at the other, are both marvels of richness in architecture, coloured marble, and sculpture of the highest class. Let those who tell us that classic architecture is effete and incapable of the highest efforts contemplate these interiors, and blush for shame. It is certainly a great pity that the exterior of this great church, especially the flanks, is neglected and shabby, as is so often the case with the Roman churches; but this is a defect which need not have been, and may still be remedied. The cloisters adjoining this basilica are of mediæval date, round arched, with twisted columns and mosaics of much beauty, and bear a close resemblance to those of St. Paul's, mentioned further on, with which they are evidently contemporaneous. Sta. Maria Maggiore is an immense pile, standing quite detached, the fronts, though architectural enough, being not in harmony with its purpose; in fact they are all of much later date than the church, and seem to have been built up as screens to enclose it and its dependencies. The interior is very grand, and exhibits the excellence of the basilican plan to perfection. The nave is lofty, roofed with a level ceiling of surpassing richness, and is separated from the aisles by a magnificent colonnade of the Ionic order, of marble, supporting a horizontal entablature and clerestory. There is the usual semicircular apse, and the effect altogether is so grand and simple as to cause me to wonder that this type of church has not in modern times been more adopted. It seems here so thoroughly suited to the gorgeous ceremonials of the Roman Catholic Church, and yet I do not see why it is not equally capable of serving the uses of any Christian church; and the best proof of its suitability is found in the fact that it was the type of building the early Christians selected as most suited for their form of worship, whatever that may have been. If they merely wanted an auditorium or place for oratory, the ancient theatres would have furnished more suitable models; but their deliberate selection of the old basilicas, and subsequent reproduction of the same form in their own buildings, shows that the latter was the best adapted for Christian uses. I believe the late Cardinal Wiseman was very anxious to have erected a church on this model for Roman Catholics of all nations in London, and we have something like one in Dublin, by the late Patrick Byrne, at Rathgar. The unity and harmony of this noble interior is somewhat marred by the introduction of two large chapels, and forming arches in the entablature opposite them; but nevertheless, on the whole, this is a very magnificent building, and entitled to rank as one of the finest churches in Christendom.

The basilica of St. Paul's without the walls was long one of the most celebrated in Rome, but was nearly destroyed by fire. The present restoration varies in many respects from the original. It is much larger than S. M. Maggiore, and has two rows of aisles, also a spacious transept. The materials are most sumptuous, and the effect of the interior very fine, almost equal to St. Peter's; but to my mind it seems to be too large for any practical use, and the vast multitude of columns produces a tiresome effect. I think the basilican idea is just overdone here, and should not be carried to such enormous dimensions and such a number of aisles and columns. The exterior is as plain as can be imagined, and of stucco; but there is a well-designed campanile, and the cloisters adjoining—dating from the tenth or eleventh centuries—are very beautiful specimens of the Romanesque style,—the only style bearing any relation to the Gothic which appears at Rome, and which would have probably developed coeval with the Gothic of Western Europe, but for the prevailing influence of the classic remains and the revival of classic architecture, which soon extinguish its early efforts.

The other numerous basilican churches are interesting, such as S. Sabina, S. Prassede, S. Maria in Trastevere, and the one Gothic church in Rome may also be classed with them—Sta. Maria Sopra Minerva—which, like Milan Cathedral, appear more exotic than indigenous, and which has been so overlaid and altered by the Renaissance architects as to present little that is Gothic except its general proportions.

The second type of Roman church is that to which St. Peter's belongs, generally cruciform, with large massive piers instead of columns between nave and aisles, and usually vaulted with a dome at the intersection of the nave and transepts. There is a vast number of churches on this plan, often displaying great skill in their construction, and richly decorated with marbles, gilding, and colour. The two great churches of the Jesuit order, del Gesu and S. Ignace, and the churches of S. Carlo in the Corso, and S. Andrea della Valle, are of this class. Their strong point is invariably the interior, and sometimes the façade, and beyond these no attention seems to have been given to any other part. This is the more to be regretted, as the constructional form was quite new, being an advance on classic, and totally different from anything Gothic, and would have admitted of highly effective treatment. Instead of this a façade is generally designed, bearing no relation to the section of the building behind, and the moment we turn the corner the deception becomes apparent, and we shrink in disgust from the shabby flanks and rere. I must confess this kind of thing has been very correctly reproduced in some of the large classic Roman Catholic churches of Dublin, which I was inclined to consider unworthy imitations, and now find that they are most exact reproductions of the faults more than the excellencies of their originals.

It is impossible to give any idea of the vast amount of sculpture and painting—sometimes good and sometimes bad—to be found in the chapels and monuments of these churches.

The palaces of Rome are very numerous, and some very noble, especially the Farnese, Borghese, Barberini and Massimi. They are familiar to most of us through Letarouilly's great work, and sometimes look better there than in reality from their grievous and neglected state. Their peculiar character, as distinguished from those of Florence and Venice, is astylar, with rustic quoins and ornamented windows, crowned by very well designed cornices. The villas around also, especially the Villa Medici, Farnesina, Borghese, and Albani are fine buildings, filled in many cases with clever paintings and sculptures, amongst which one could spend many a day with delight and advantage, and which are thrown freely open by their noble owners.

Before leaving Rome, I should notice the many excellent and tasteful works erected during the reign of the present pontiff. Whatever political troubles may have been encountered during that period, many public improvements seem to have been carried out, often at great expense, and generally under the influence of the most correct taste. The restoration of the huge basilica of St. Paul's without the walls has been already noticed, but several of the other ancient basilicas have also been lavishly enriched and repaired. The new Campo Santo (a public cemetery) deserves notice, and in particular the delightful gardens and terraces on the Pincian Hill, exhibiting the most masterly skill in managing an awkward site, the declivity and irregularity of which is made to enhance the beauty of the result. The fountains, statues, busts, &c., with which these gardens are adorned are all excellent and well chosen, recording the triumphs of art and intellect which Italy has achieved. These gardens form a most agreeable drive and promenade, commanding a splendid panorama of the city and surroundings.

(To be continued.)

SIR WILLIAM WILDE'S THEORY AS TO THE ROUND TOWERS.*

ONE would think that all the questions respecting the round towers had been solved, so far as they are ever likely to be; yet, as there are still unlearned people, or sceptics and egotists, who will not accept truth as it is proposed to them, perhaps I may state my own form of faith, so far as my observations and reading have enabled me to form an opinion. As the question narrows itself into an architectural one, the following preliminary observations may not be here out of place :—

I. There are no pagan or pre-Christian *mortared* stone structures in Ireland. The only one that has been in any way supposed to contain cementing material is the Hag's Cashel on Lough Mask, county Mayo; but then it must be remembered that it was occupied so late as the reign of Elizabeth.

II. There are no archæic idiographic or merely ornamental carvings on punched or chiselled stones in Ireland, and even the first early literal inscriptions, and all the oghams, are graven on *undressed* stones. There is no vestige of any description of architectural adornment by means of dressed stones, beyond the incised lines already known, referring to pagan times.

III. Nearly all early Irish stone structures are round— forts, cahirs, cashels, tumuli, cloughauns, Druidic circles, and other elevations and enclosures, civil, military, social, religious or funereal. Numerous cahirs, cashels, and forts, are mentioned as habitations or places of defence in our annals, both before and after the arrival of St. Patrick.

IV. Small churches were the first *mortared* buildings. They were not always placed east and west, as the points of the compass were not then as well known or as much regarded as at a later period. As the churches grew, not merely in reverence, but by possessions and gifts, they necessarily attracted the cupidity of a rude people, when in and about them were the clerics, the learned of the land, the artificers and the wealthy. All the clergy, and possibly a portion of the people, lived in community round the little church, in cells, oratories, cloughauns, wattled huts, caves, or forts.

V. Many were the inroads made on these little communities by marauding native chieftains, hostile clans, or invading foreigners—their sanctuaries rifled, and numbers of themselves slain. The character of warfare had begun to alter—the fort, the cave, and even the circular cahir, with its colossal dry stone masonry, were no longer available as places of refuge, and the erection of the last was not always within the compass of the little Christian congregation, or the inhabitants of the surrounding district. Still the faith in the defensive character of the circular fort remained firmly in the minds of the people, and they raised the circular tower *more patriæ* in the vicinity of their church and treasure-house—generally opposite the west end, and therefore affording a ready means of safety, when rushing from the sanctuary, to those threatened with sudden invasion; and drawing up the ladder, and closing the door or doors, they and their goods were secure. Hence, in my opinion, the first round towers were built solely and exclusively as *places of defence, protection, and security.* That was their "use and origin," and no other. But, presuming that the churches had to be built, endowed, and to become rich in ornament, crozier, cross, chalice, relic, host-bell, shrine, book, silver, gold, prescious stones, and costly vestments, before they could become objects of attraction to the avaricious;—and not finding any vestige of such remains (except a few MSS. chiefly in Latin) belonging to the second half of the sixth, or the whole of the seventh century, I incline to advance the date of the erection of these towers to a period even later than that to which they are referred by Dr. Petrie.

VI. If there be one class of architecture in Ireland more than another that explains itself, and exhibits a transition period of at least 300 years, it is that of the round tower. Formed for defence at a period of early Christianity, say after A.D. 600, we find the primitive Irish round tower short, stunted, of the rudest form of masonry, and with scarcely the mark of a chisel upon any of its stones; with a sloping-jambed, square-headed doorway, like that of the adjoining church, or the fort or cahir that preceded it, and with a domed roof, similar to that which could also be seen in the sepulchral chamber and the cloughaun—with the basement presenting a "batter" like that found in some of the old cahirs, and the doorway raised some ten feet above the surrounding ground, and therefore over the reach of an unsupported assailant trying to break in the flag or wooden door with which those in the interior secured themselves—it was in these days almest impregnable.

In none of these very rudely-built towers is there any architectural adornment, or the slightest vestige of a Christian emblem. It must be borne in mind that they were only used occasionally and temporarily until succour could come and relieve the garrison within; and that such relief would in most cases be sure to arrive in a few hours. It may be urged against this architectural and common-sense view of their direct and immediate use and origin, that the ordinary round tower would not hold even the small surrounding Christian community, consisting of the officiating priests, possibly a few monks, the servitors of the little church, some scribes and artists, and a few dozen of the neighbouring cultivators or soldiers who might rush in on the emergency of a sudden inroad or assault; but then it must be recollected that the surrounding community was very small—that if forty or fifty people could get in, they would for a while at least be secure from danger, except from fire, as occurred when we read that a tower was burned, full of people, and that they could very well find standing room on the average four floors of the building. It is remarkable that, from 948 to 1238, when Kilcoona or Annadown was commenced, the annalists do not mention the erection of a single tower, although it may be presumed that some swinging bells may have been introduced into Ireland during these three centuries.

Thus stands my belief respecting the use and origin of the first round towers. It is really not worth while, after all that has been written on the subject, refuting the nonsensical arguments as to their Oriental or Danish origin, and their totally impossible uses as gnomes, monastic retreats, penitentiaries, beacons, fire-worshippers' towers, Druidical temples, phallic emblems, mausolea, &c. Neither would it be of use again to refute the theory respecting their Phœnician or "Cuthite" origin. Petrie had swept most of these fallacies away already. As to their use as mausolea, I think I have myself cleared away the arguments and assumed facts connected with that delusion. Finding towers built over human remains only proves that that they were erected in old graveyards.

As stated above respecting Annadown, which was probably never compteted, there is no reference in our annals to the erection of a round tower in Ireland, although the building of churches and their endowments by holy men are often spoken of. The first notice in our annals, or anywhere in writing, of a *cloic-teach*, or "house of the bell," does not occur until the middle of the tenth century, when the great ecclesiastical establishment at Slane, probably the very first of its kind in Ireland (as St. Patrick is said to have commenced his mission there), was attacked and burned by an invading force, and the bell-house, with all its treasures, and a multitude of people therein, were burned.

Starting from the middle of the eighth, or the beginning of the ninth century, the round tower, like the adjoining church or sculptured cross, was better built, raised to greater height, got a more conical cap, and, as foreign architecture was introduced—Greek, Roman, Saxon, or Norman,—was decorated with the arch, the ornamented doorway, the sculptured fillet round the cap, and eventually the representation of Christian emblems—the Cross and the figure of the Crucifixion.

No one acquainted with the subject of either architecture or archæology can imagine that all the round towers were coeval, or even within three centuries of each orther, the first with the last,—neither can any person suppose that the decorated arch, the fluted jambs, and all the other architectural adornments, well known to have existed long prior to this period in other countries, were the offspring of Irish genius, unassisted from without.

With acute observation, great learning and research, and a most refined taste, Petrie worked out these architectural subjects. Let us now see what the record says. Sylvester Gerald Barry, the most learned man of his day, and known to us as attached to the Irish court of Henry II. and his son John, and who, from his Welsh origin, is known in books as "Giraldus Cambrensis," when he wrote his Topography of Ireland, in 1183, comprises his description of the round towers in the following words, so often overlooked or misinterpreted by subsequent writers:—"*Turres ecclesiasticas, quæ, more patriæ, arctæ sunt et altæ, nec non et rotundæ.*"—Ecclesiastical towers, which, after the fashion of the country, are slender, high, and round. This told the story of the round towers nearly 700 years ago—ecclesiastical, or belonging to church communities; round, after the fashion of the country; and, without stretching the question too far, constructed by the people of the country; and, being within the Christian period, erected between the arrival of St. Patrick and the writing of the Cambrian antiquary.

That is the first of the three positions worked out with such learning by Dr. Petrie, viz.: "That the towers are of Christian and ecclesiastical origin, and were erected at various periods between the 5th and 13th centuries." Whether they were ever *originally intended* to serve as places "in which the sacred utensils, books, relics, and other valuables were deposited," is no more than to say that any keep, castle, citadel, or place of strength would, in case of emergency, serve for the preservation of treasure; but that they were *erected* "as keeps, or places of strength, into which the ecclesiastics to whom they belong [and, as shown by history, the laity also] could retire for security in cases of sudden predatory attack" is, I think, fully proved.

"That they were probably also used, when occasions required, as watch-towers," is only to say what is common to all fortresses or towers even in the present day. But that, with their stone roofs and wooden floors, they could ever have been intended for "*beacons*," is a theory for one of their original uses that I am not prepared to accept.

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* From *Jour. Royal Hist. Association.*

That they never were originally "*designed*" to serve as belfries, I have already remarked upon; although, when large cast bells came into use, possibly in the tenth or twelfth centuries, such may have been hung in some of the later ones, or in the miniature towers absolutely attached to churches of more modern date, as at Glendalough, Ireland's Eye, and Clonmacnoise. In the latter case, however, the top apertures would not appear to have been constructed for the purpose of giving exit to the sound of a swinging bell. If the round tower was originally intended for a belfry it would, I think, have been incorporated or attached to the primitive church (the bell of which it was intended to hold), instead of being studiously placed at some distance from it, and thus serving as a citadel to those who fled to it. It is strange how fragments of the true uses of our Irish towers crop out here and there, even among the writings of the most fanciful antiquaries of the past century. Thus Mr. Wm. Beauford, in his article on the *Cloghadh*, published in Vallancey's "Collectanea," writes thus:—"The cloghadh now remaining in Ireland were all erected by the Christian clergy, and are none of them older probably than the beginning of the seventh century, or none of them later than the close of the eleventh, though evidently derived from from structures of a similar nature used by the pagan priests; they were, however, continued as belfries to the close of the fourteenth century.

As the belfry theory is still likely to have many adherents, I beg to add, even at the risk of appearing tedious, the following additional particulars for and against it. The small early Irish church bell was almost invariably square; and although it might have been cast in bronze, in the same way as a celt or a sword, still it was in most instances formed out of a piece of metal riveted at the sides; in many cases it was made of iron, to improve the sound of which portions of other metals—bronze, silver, and tin—were driven into it, and partially fused by such a heat as did not melt the iron. That these bells were of great antiquity and were highly reverenced is shown by the fact of their being afterwards enshrined in some of the finest specimens of jewellery now in our collections. They were also known by special names. Dr. Reeves, in his learned Commentary on "Adamnan's Life of St. Columba," says—"All the ancient Irish bells were *hand* bells." Moreover, these bells had their appointed *herenachs* or custodians, whose duty it was to preserve them, as well as the shrines, croziers, books, and other similar relics. Some of the descendants of these persons exist at the present day.

Dr. Petrie, when describing one of the sculptured stones which formerly existed at Glendalough, originally drawn by Baranger in 1779, and which, in a fragmentary condition, was subsequently sketched by the late Mr. Du Noyer, says, at page 249—"The quadrangular-shaped bell, which appears in the hand of the other figure, exhibits that peculiar form which characterises all the consecrated bells which have been preserved in Ireland, as having belonged to the celebrated saints of the primitive Irish Church; and there is every reason to believe that this quadrangular form gave place to the circular one now in use previously to the twelfth century," but when or where is not stated. And as to the consecration of the hand or host bell, I am not aware that such a rite was common in the Christian Church, although large swinging bells were generally baptised.

The most powerful argument brought forward by Petrie for the belfry theory is that respecting the name and duties of the *aistreoir* or ostiarius, an officer whose duty, as explained by Bishop O'Reilly in his Irish Dictionary, "was to ring the bell in the steeple of the church—the lowest of the seven degrees of ecclesiastical officers." But the authorities quoted for this office of the bell ringer are certainly not contemporaneous with the early round towers, and indeed do not always apply to the *aistire* or bell ringer even of the tenth century. As to the evidence derived from the Four Masters respecting the tower of Clonmacnoise, when the large bells there were carried from the cloictheach, as well as the images, altars, gems, and even window glass, it does not bear forcibly upon the subject, for it did not occur till 1552, many centuries after the great tower was built; and if the small tower is the one referred to, its comparatively modern structure would exclude it from the argument.

NOTES FROM DERRY.

AMONGST the latest instances of building progress in Derry we have to notice the extensive premises lately erected for Mr. W. F. Bigger, provision merchant, on the site of the old gas works in Foyle-street. The buildings occupy a large area from Foyle-street to Soaphouse-lane, and the offices and stores that Mr. Bigger intends to retain in his own possession rise to a height of four storeys. His old premises adjoin, and extend to Sugarhouse-lane; but he contemplates the erection in their stead of shops and stores similar to those erected on the south-side. This would further add to the general appearance of the buildings, which would then present a handsome *facade*, with two wings of similar design on either side of the four-storied block. The style of architecture is freely-treated Gothic. On the ground-floor the openings are, for the most part, pointed. A good deal of carved work has been introduced on the piers, and cut and carved stone is extensively used. There are ornamental string-courses between the several floors. The main building is composed of Moore's brick, which is also employed in the projecting eave-cornices. The shop and office windows are filled with moulded oak, and the sashes with plate glass. Pine, memel, and mahogany have been used in the doors and offices, and the wood is either polished or varnished. The panels in the entrance gate are filled with wrought iron. The premises are altogether very commodious, and include cutting, curing, drying, and smoking-houses, and all other necessary adjuncts of an extensive provision trade. Messrs. Young and Mackenzie, Belfast, were the architects, and local tradesmen were employed in the erection of the buildings. Mr. Boyd executed the mason and carpenter work; Messrs. Haslett supplied the cut stone; Messrs. Reeves and Hegarty did the plastering; Mr. Robert Campbell, cabinet-maker, executed the work required in connection with his branch; and Mr. Aaron Baxter supplied the gasfittings. Mr. Young (of the firm of Young and Mackenzie) inspected the work during its progress, and Mr. Arthur Kent acted as clerk of works.

The opening of the new concern was auspiciously marked by a dinner, to which about 150 sat down, being mostly the *employes*. Mr. Bigger, the worthy proprietor, in responding to the toast of his health, briefly traced his career in Derry. Beginning twenty-six years ago "in a very small way" at the Old Barracks, he subsequently took the old Sugar-house premises, which he occupied for about twelve years, and then, purchasing the old Gas Works, he had erected upon them the more extensive premises in which they were assembled. He mentioned this merely for the purpose of acknowledging the assiduity of his workmen, who had helped him to that prosperity. He never employed a man on account of his religion; and, whenever a vacancy occurred, he always, without reference to creed, promoted one of his own men; attention, sobriety and honesty being the only passports to his favour."

CORRESPONDENCE.

CARLISLE BRIDGE.

TO THE EDITOR OF THE IRISH BUILDER.

SIR,—My attention has been called by Mr. Richard Turner to a paragraph in your journal, in which it is stated that the bridge is to be rebuilt "in accordance with the plans submitted to the Council by the eminent firm of Lanyon, Lynn, and Lanyon, in 1863, and awarded the prize for the best design." As one of the hon. secretaries to the committee which in that year advertised for plans and offered three premiums of £200, £100, and £50 for the best designs for an iron bridge, I wish, in justice to Messrs. Turner and Page, to state that Sir Richard Griffith, Colonel M'Kerlie, and Professor Downing, of the Engineering School, T.C.D., to whom the selection was referred, awarded the first prize for the best design to Messrs. Turner and Page. ROBERT G. COLLIS.

STREET ARCHITECTURE.

TO THE EDITOR OF THE IRISH BUILDER.

SIR,—The subject of street architecture has been ably treated by Dr. Cameron in his recent lecture at the Royal Institute of the Architects of Ireland. Any artistic display of detail or sky outline exhibited in our cities in this country we may generally trace to intercourse with our continental neighbours. The Spanish element has been well developed in the South and West, while numerous evidences of French taste may be found in our capital and inland towns. Were the public better informed of the trifling difference in cost between solidity and sham, we should have less of the mean, stereotyped elevations which are daily growing up around us. A stone façade, or even a brick building, with characteristic stone dressings and gabled roof, costs but little over the ordinary level and square style so long in vogue. The external appearance of the dwellings of the wealthy conveys no impression to the outsider of the spendour and luxury within. The profession should hail with pleasure the criticism of such men as Dr. Cameron as being calculated, aided by the expression of opinion in the journals of the day, to direct the attention of the public to the fact that it lies in the power of every householder to assist in rendering the city an attractive centre, meriting the encomiums which already strangers are disposed to lavish upon it.

C. G., Architect.

SALARIES OF DEPUTY COUNTY SURVEYORS.

TO THE EDITOR OF THE IRISH BUILDER.

SIR,—A short time ago there was a movement on foot by the deputy county surveyors of poor Ireland for an increase of salary, and for superannuation. I humbly ask those gentlemen, through the kind medium of your columns, What has been done since the general meeting, last September, at the Verdon Hotel? Have they lost hope, and has the cold shoulder or shrug *a la française* been given to this laudable and very commendable association by "*the powers that be*"?

ARGUS.

Bagenalstown, 26th May, 1870.

NOTES OF WORKS.

The foundation-stone of a new Presbyterian Church has been laid at Portglenone, Co. Antrim. It is designed to accommodate about 900 sitters. The body of the church will be rectangular, about 80 feet x 46 feet; it will be 26 feet high at side wall, and 34 feet to ridge; the roof being half opened. The wrought and turned timbers of the roof frames, which are exposed, are placed upon the piers between the coupled windows in side walls. Gablets rise over two of these at each side, with circular lights in each. The gallery will occupy one end, with narrow wings, curving into side walls, at about half their length. The pews will be of modern construction, with inclined backs and carved bench ends. A spacious reading desk will be placed in a recess at opposite end to gallery. The vestibule, or entrance porch, will have two wide outside doors, under pointed arches, with label mouldings, and a gablet rising over each, with finial on top. Immediately over this porch (which will be in gable of church) five lancet windows will be placed. A square tower will rise at right-hand side of porch to a height of 60 feet, surmounted by a slated spire of 40 feet, with a wrought-iron finial. In lower storey of this tower is the stair to gallery, with entrance door in front. The upper storey will have double lancet windows on each side, the heads rising into gablets breaking into roof of spire; these are fitted with louvres, so that this storey can be used as a belfry. Mr. G. Tipping, Castledawson, is the builder, and Messrs. Young and Mackenzie, Belfast, the architects.

A new glass and bottle manufactory is to be erected on the site of the old glass works, Ringsend, the plans for which have been prepared by Mr. M'Curdy. The chimney will be over 100 feet in height, and all the newest appliances and inventions adapted to the production of glass are embodied in the designs.

A new church is to be built in that now populous district of Kingsland Park, near Portobello, the site for which, together with a munificent donation, have been given by Frederick Stokes, Esq., J.P. Many other very liberal contributions appear on the list of subscribers. Mr. M'Curdy is the architect.

We understand that Mr. John Nolan, of Meredyth-place, and Messrs. Turner, of Hammersmith Iron Works, have respectively entered into the contracts for the new base, wall, and railings to be erected in front of Trinity College, in College and Brunswick streets. The works are to be forthwith commenced, and pushed on with the utmost despatch. The designs have been prepared by Mr. M'Curdy.

Lucan church, Co. Dublin, has been reopened after undergoing extensive alterations and additions. The contractors were Messrs. Barker, Upper Abbey-street.

Carrick-on-Shannon church was re-opened on Sunday last, after extensive repairs.

The following works are in course of erection by William Conolly and Son, Upper Dominick-street:—

A new dwelling-house, with out-offices, on Temple-road, Rathmines, for James Pillar, Esq. Mr. D. C. Ferguson, architect.

Alterations and improvements to Swords church. Mr. Jas. Bell, architect, Malahide.

Two sets of farm buildings, including barns, stables, coach-houses, &c., at Belgriffin Park, under Board of Works, for Messrs. Carolin.

Extensive alterations and improvements to Belmont House, Wexford, for Chas. Peacock, Esq.

HEALTH OF DUBLIN.

IN the Dublin registration district (which extends over an area of 9,745 statute acres, and had, by the Census of 1861, a population of 314,409), the births registered during the week ending May 21st, amounted to 163. —77 boys and 86 girls. The deaths registered during the week were 129—77 males and 52 females. The average number in the corresponding week of the previous six years was 162. Thirteen deaths resulted from fever, viz., 7 from typhus, and 3 each from typhoid or enteric, and simple continued fever. Scarlet fever caused 7 deaths, measles in 1, croup in 3, and diphtheria in 1. Ten children died from convulsions. Fifteen deaths were caused by bronchitis, and 3 by pneumonia or inflammation of the lungs. Heart disease caused 5 deaths, 3 deaths were attributed to liver disease, 1 to nephritis or inflamation of the kidney, and a like number to nephria or Bright's disease. Apoplexy was the cause of 4 deaths, paralysis of 3. Twelve persons died from phthisis or pulmonary consumption.

The number of deaths registered in the entire of the Dublin Registration District during the week, represents an annual ratio of 21 in every 1,000 of the population by the census in 1861. In the surburban district of Rathmines the annual ratio was 17 per 1,000; in Donnybrook it was 22—the City of Dublin Hospital and the Hospital for Incurables are situated in this district; in Kingstown 23 deaths per 1,000 of the population by the Census in 1861. There was not a death registered in Blackrock district during the week.

At the Observatory of the Ordnance Survey Office, Phœnix Park, the mean height of the barometer during the week was 29·958 inches. The highest daily mean reading (30 091) occurred on Wednesday, and the lowest (29·819) on Sunday. The mean temperature during the week was 56·6° (the average in the corresponding week of the previous six years was 51·8°); the lowest daily mean (50·5°) occurred on Sunday, and the highest (62·9°) on Friday. The temperature was highest on Saturday, when the thermometer registered 74·4°, and was lowest on Sunday, the mercury having fallen to 40·0°. The highest reading of the barometer during the week (30·103) occurred on Wednesday at 3.30 P.M., wind S.W.; and the lowest (29·807) on Sunday at 9 30 A.M., wind S.W. The mean of the dry bulb for the week was 57·4°; and of the wet bulb 53·9°. The mean humidity of the air was ·796—complete saturation being represented by 1·0. The rainfall during the week measured ·375 in.

MISCELLANEOUS.

ANCIENT CELLARS OF WINCHESTER.—During the present Government survey of Winchester, the cellars occupied by Messrs. Hayles Brothers, grocers, wine and spirit merchants, have met with considerable attention. They are situated in Parchment-street, on the site of which probably stood the church of St. Martin, mentioned in the thirteenth century as existing in the time of Bishop Pontissara. Part of the *débris* of the church was evidently used in the construction of these cellars; the vaulting is of brick-work; ten arches spring from a centre column and rest upon nine half columns or pilasters in the side walls, from which again spring other arches. One of the pilasters has been removed, and the massive wall pierced so as to form a passage into another cellar of smaller dimensions, but of still earlier date, the roof of which is composed entirely of blocks of chalk.

OLD BOOKS.—An old Birmingham second-hand book catalogue of 1793 tempts, Mr. Cadby, of that city, to quote some of its prices, to show the change in the value of books: a Folio Shakspeare of 1664, by Heminge and Condale, in good preservation, 30s., worth more than thar in pounds now,—Heywood's "History of Women," 2s.6d. (perhaps £3 now),—Dugdale's Warwickshire, £3 (now £35), Penny Histories, at 7d. per quire, and Ballads at 2½d. or 3s. 6d. the ream (turn pence into pounds for the present price),—The Funny Jester, 6d. One book has gone down in price, Chamber's Dictionary, 5 vols. folio, 10 guineas in 1793; it cannot be worth 10s. now.

A BANK STRONG-ROOM.—The strong-room in the new branch of the National Provincial Bank at Birmingham is of solid masonry; it is of an irregular shape 17ft. by 10ft. being its greatest dimensions, and it is 10½ feet high, with an arched roof in two spans. Messrs. Chubb have lined it with wrought iron plates ½in. thick, connected together from the inside, and fitted up with iron shelving. At its further end is one of Chubb's fire-resisting moveable strong-rooms, 7ft. high, 5ft. 5in. wide, and 7ft. 6in. deep, weighing nearly six tons. The interior of this is fitted with iron shelves, and within it is another Chubb's safe for special securieties. The entrance is secured by a strong-room door, the outer plate of which is 1½in. thick, of iron and hardened steel, and it has 12 massive bolts and two distinct locks.

The Dublin Exhibition Palace and Winter Garden has been sold to Sir Arthur Edward Guinness, Bart., for the sum of £60,000. It is expected that all the creditors will be paid in full.

The will of the late Daniel Maclise, R.A., has been proved. Personalty £40,000.

A halfpenny morning journal has been long proposed for London, and at last one is to be published. We can offer no opinion about the probabilities of its success or failure, but when the proprietors talk of a circulation of half a million or seven hundred thousand we think them sanguine.

Another new comic paper is to be started in Dublin, under the title of *Blarney*. The frontispiece represents the people, who are determined to kiss the famous stone contained in Blarney Castle.

We hear that "trade organs" are getting more numerous. A publication, entitled the *Irish Grocer and Trader's Review*, is to be published weekly in Dublin, commencing with June 4.

A very pretty and interesting exhibition of ladies' fans has been opened at the South Kensington Museum; it comprises 418 articles, including a considerable number of fan mounts: these are of many dates, derived from France, Japan, China, India, England, Spain and other countries; they were designed for various occasions, such as weddings, mourning, festivals, &c. Some of the examples have particles of historic interest, *e.g.*, one is described in a letter by Madame de Sevigne; the decorations of another are attributed to Lebrun, this was the gift from the Tycoon; the stick of that is said to have belonged to Madame de Pompadour, therefore it may have been used to rap the great wig of Louis the Fifteenth himself. For ourselves, as we have not left off wondering at Louis the Fifteenth, it will be long ere we care much for a fragment of his mistress's fan, if this be one.—*Athenæum.*

NOTICE.

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TESTIMONIALS.

From WILLIAM TITE, Esq., M.P. *for Bath, and Architect of the Royal Exchange, London.*

House of Commons, 2nd March, 1864.

DEAR SIR,—In reply to your note, I beg to say that I have used both the sorts of Cement manufactured by your firm, and that of Messrs. Francis and Son; I mean the Cement usually called Roman Cement, or the more recent introduction of Portland Cement. I believe these Cements, manufactured by either of your firms, to be equally good. I know no difference, chemically or practically, between them; and I should use, and authorize to be used indifferently, either one or the other. You are at liberty to use this note, if you think it necessary.—I am, Dear Sir, your obedient servant,

Messrs. White & Son. (Signed) WILLIAM TITE.

From R.O. MINNIE, Esq., *Surveyor to Board of Ordnance, London.*

War Office, Pall Mall, London, S.W.,
3rd March, 1864.

GENTLEMEN,—In reply to your request, I have much pleasure in stating my favourable opinion of the quality of your Portland and other Cements, which have been extensively used in the Public Works connected with the War Department at home and abroad, especially in several of the fortifications now being erected in this country. On all occasions within my knowledge the quality has been equal to that of any other manufacturer, and has given great satisfaction.—I am, gentlemen, your obedient servant,

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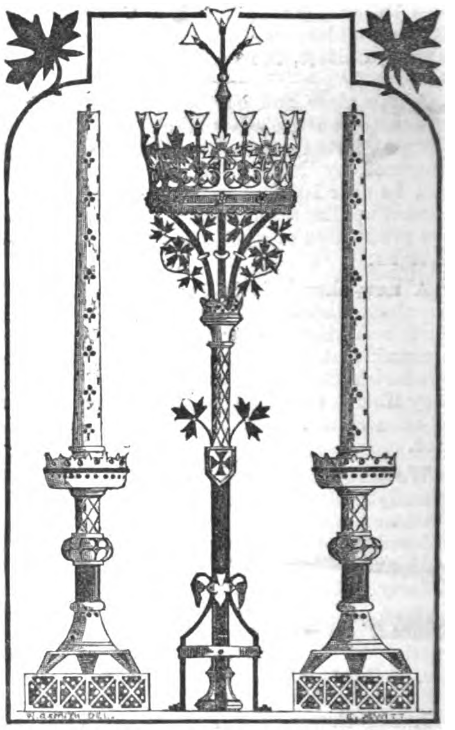

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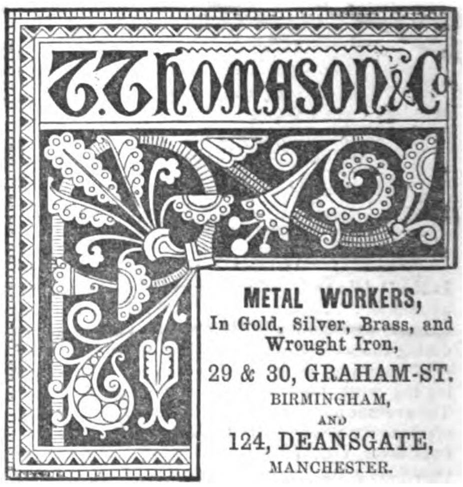

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The Irish Builder.

Vol. XII.—No. 252.

The Belfast and North of Ireland Workmen's Exhibition.

THIS exhibition was opened by the Mayor of Belfast on the 17th May, and closed on Saturday, 4th of June, by the same gentleman. The results of the exhibition are of the most gratifying character, having worthily accomplished the object for which it was intended—the development of the artistic and mechanical talents and abilities of the working men of the North,—and at the same time, unlike a great many similar undertakings, it has proved a complete success in a pecuniary sense—a fact which speaks well for the people of Belfast, and their interest in all that tends to elevate the intellect and improve the condition of the working man.

There was a very large and interesting collection of every kind of manufacture peculiar to the North, which were classed under the head of "textile fabrics," including goods manufactured of flax, wool, and cotton. This section comprised hackling of flax, threads, needlework, designs for handkerchiefs, block cutting, designs for embossed ornaments in linen, embroidery and damask, Irish guipure and apploque lace, designs for tweeds, &c.,—all exhibiting the advancement and growth of artistic principles as applied to fabrics.

In "Household Furniture and Upholstery" there are some good entries, but we regret to say that in many cases very little real artistic feeling has been displayed in the design, while invariably the execution of the articles in this section was good.

The section for the display of "Vegetable and Mineral Substances used in Arts and Manufactures" contained a very interesting collection;—flax in its rough and dressed state, linen yarns and linen, starch, samples of manures specially adapted for the various crops, tobacco manufacture in its different stages, samples of limestone, and many others, which our limited space prevents our noticing in detail.

Specially interesting to us was section 2, which embraced architectural decorations, building materials, &c.; some good chimney-pieces and mural tablets; various specimens of Irish granites and marbles, worked up to a high degree of finish; stone from Ritchie and Jackson's Scrabo quarries (there is a good bit of carving by Edward Glaney of a "quaint figure," life size, out of a solid block of this stone); revolving shutters; some excellent carvings in various kinds of woods; several figures, busts, &c., by Belfast working men, displaying, with few exceptions, excellent taste and workmanship.

The other sections are for the display of ceramic art, in which the Belleek Pottery Company appear to greatest advantage; stationery, in which Vere Foster's exhibits appear to have had it all their own way; natural history, showing specimens of chalk, limestone, &c.; and a case of British sea birds; miscellaneous contributions, consisting of jewellery, philosophical instruments, several good models, &c.

Next to the Fine Art Department, the section of the exhibition which appeared to excite the greatest amount of attention was that which contained the machinery; here were some beautiful specimens of various kinds of mechanical contrivances which were exhibited working, the motive power being supplied by a fine turbine wheel by M'Adam and Co., Belfast. The most noticeable features in this department were a model power loom; a machine for the manufacture of ærated waters, which attracted more attention perhaps than any other machine in the department, probably owing to the fact that soda-water and all manner of ærated drinks were being made here and distributed to all those who had any inclination for the refreshing beverage;—this machine belongs to Arnott and Co., and contains within itself everything necessary to prepare the waters, fill the bottles, and cork them. A small turbine wheel, no larger than a model, and driven by a jet of water about one-eighth of an inch diameter, with such power as to enable it to work a sewing and churning machine, was the centre of much attraction. An hydraulic ram, model engines and locomotives, model fire-escapes, fire and burglar proof safes, handkerchief cutting machine, some patent ploughs, and other agricultural implements make up the collection.

Last, but by no means least, we come to the Minor Hall, where the fine arts are displayed in a large collection of pictures and sculpture; many good, some bad, and more mediocre. The pictures were wretchedly hung, many excellent drawings being stowed away in obscure corners or under the windows, and the very best wall space occupied by some amateur drawings—very good, no doubt, in their way, but altogether unworthy of good places, especially when really good drawings were removed to make way for them. A great many good and valuable paintings, sculptures, and bronzes, some by the old masters, were lent by the Lord Lieutenant and the gentry of the neighbourhood, and specially noticeable among them were portraits of Milton, Sir Edward Montague, Speaker of the House of Commons in 1546; Buchanan, tutor to James I.; Henry VIII., Schomberg, and a very noticeable full-length painting of O'Sullivan Bear, chief of Bantry. This painting was copied for the Rev. J. O'Laverty, P.P., M.R.I.A., Holywood, from the original in the College of the Noble Irish in Salamanca.

Mr. Burgess exhibits some beautiful water-color drawings. The "Ruins of Grey Abbey, Co. Down" and "Ancient Doorway" of the abbey are singularly well drawn, the character of the detail being given with fidelity, and the coloring is extremely artistic. "White Rocks, Dunluce," in oil, and the "Falls" of the Clyde" are also by Burgess.

There are some paintings by working men, of various merit, to most of which medals and certificates of merit have been deservedly awarded.

The sculpture consists of busts of the late Dr. Cooke, W. Jaffe, the late W. Clarke, Dr. M'Cormac, &c.

We must not omit to mention some beautiful studies in photography, by Payne, Jennings, and others; the most noticeable of these are views of Tollymore Park (spoken of as a residence for the Prince of Wales), and Fortwilliam Park, near Belfast.

There is a very fine and varied collection of old MSS. of periods dating from A.D. 1230, and a large assortment of old bronze utensils, flint arrow heads, &c.

We now go into a wretched little apartment, about 8 feet by 16 feet (formerly the end of one of the corridors cut off), where the sapient committee who undertook the arrangement and disposed of the Fine Art section have housed the architectural works; and here are to be found some excellent drawings. First of all is Mr. Lynn's premiated design for the Houses of Parliament, Sydney, which is so well known to our readers as to call for no description at our hands. Shee Almshouses, Waterford, by Mr. Drew, a long picturesque group of buildings, the chief feature of which is a semicircular apsidal projection in the centre. Mr. Drew's design for the Belfast Municipal Buildings is also shown in an artistic drawing. Mr. T. Hevey exhibits a large pen-and-ink drawing of Holywood Catholic Church, and a perspective drawing of his design for the entrance to the new Catholic Cemetery, Belfast, which promises, if we are to judge from the drawing, to be unique and graceful; two curved wing walls lead back from the road to the great entrance gate, which is under an arch 18 feet to the soffit, the tympanum over the arch is filled with sculpture representing the resurrection of the dead. "A Study for a Chancel," by Mr. Hevey, is a rich and attractive drawing, and shows a semicircular apse, with the ceiling highly decorated in colour.

Mr. A. T. Jackson exhibits his drawing for a Presbyterian church, to be erected for Rev. Mr. Hanna, Belfast.

Mr. Kendall, Holywood, has some drawings for various competitions—Filgate Hall, Ardee, &c.; and his design for the Wesleyan Chapel, Holywood.

Messrs. Boyd and Batt exhibit, *on the balcony of the Great Hall*, some four or five drawings: their design for Mr. Hanna's church (unsuccessful), the selected design for Filgate Hall, &c.

The medals and certificates were distributed by the Right Hon. the Lord Chancellor (Baron O'Hagan). From the very eloquent address delivered by his lordship on the highly interesting occasion, we take some passages:—

"When I left Ulster many years ago Belfast was a modest town, with much intellectual activity and some commercial success, and a history connecting it with the better times of Ireland; now it has grown into a magnificent city, whose progress has been a marvel to the world. I remember when a single chimney represented that great trade which has poured such prosperity amongst you; now the chimneys make a forest. You have an enormous population, and merchant princes abounding not more in wealth than in sleepless energy and untiring enterprise. It seems to me that your own industrial success fairly entitled you to the honour of inaugurating a movement in favour of the working people; and in this exhibition it has been well begun. Heretofore, as you have truly said in your address, the children of toil have had no meed of honour. In the former great undertakings of this kind, the comparative advance of nations was illustrated, and great capitalists and employers monopolised the place of honour. But that class whose labour is needful to clothe our life with comfort and adorn it with beauty were left in the shade—their merit unrecognized and their names unknown. It was the very old story—

"Sic vos non vobis mellificates apes;
Sic vos non vobis nidificatis aves;
Sic vos nen vobis vellera fertis oves;
Sic vos non vobis aratra ducitis boves!"

It is time that we should change all this. It is time that the unseen flowers and the caverned gems of genius which lie hid in the workshops of the world should see the light, and command a grateful recognition. You have done a great and a good work in helping forward that happy consummation—and you have done it, as I conceive, in the best possible way. The working men themselves have been the originators and the most effective promoters of the movement They have been aided with affluent generosity by your wealthier citizens; but the affair has been effectually their own, and they have acted for themselves in no spirit of fanatic infidelity, or revolutionary frenzy, or antagonism to the supremacy of law and the settled order of society such as, unhappily, has found development in other places. They feel that they have enough of credit and of happiness in their own successful industry, and they are not ashamed to adopt the ancient saying, "*Laborare est orare.*" Heaven accepts in honest toil a hallowed incense, and its fruits are not less rich and ample because they are consecrated by the tribute of reverential gratitude to the Almighty Being from whom all good things come. Further, I am convinced that great social benefits will arise from the mode in which this exhibition has been created and conducted to its large success. It has brought together classes of the community which have been heretofore too far apart. The capitalist and the operative, the employer and the employed have worked together in the most cordial amity; and it is impossible that they should not be animated by stronger sentiments of mutual trust and confidence on that account. They will learn to cherish reciprocal respect, and desire to be helpful to each other; and so promote that healthy consolidation of the body politic which exists when all its parts are in harmonious relations with each other, and all its members fulfil their several functions in their several spheres. As it was in "the brave days of old":—

> "When none was for a party,
> When all were for the state;
> When the rich man helped the poor man,
> And the poor man loved the great"—

so should it be in well-ordered communities; and I am well convinced that the events of the past mouths have greatly advanced in this way the true interests alike of rich and poor amongst you. Another word, in reference to an observation of your excellent mayor, which has my most hearty concurrence. He said that the exhibition and its accompaniments had tended greatly to heal divisions and remove asperities amongst the people of Belfast, and unite them as they have too rarely been united. I rejoice at this. It should give joy to all good men. I am the friend of your chief magistrate, though he differs from me widely on questions of the gravest moment; but I am not the less his friend on that account. We have no difficulty in combining for common objects in the spirit of Christian charity and good fellowship, whilst we "agree and differ" in our political and religious views, and there is no sort of reason why Irishmen universally should not learn to act in that tolerant and kindly spirit, knowing that the same dear country —which is their common mother—claims the loving allegiance, and should command the devoted service of them all. I echo the wise aspirations of my friend, and pray that this exhibition and the occurrences of this day may promote that union which is essential to Ireland's prosperity and progress, and will be amply adequate to the happy accomplishment of all her reasonable and rightful ends. I have seen last night and this morning all the treasures which have been accumulated in this admirable building. I shall not attempt to refer to them in detail, or to any one of them. I have not time, and, if I had, I possess neither the artistic skill nor the technical vocabulary which might warrant me in attempting criticism. I can only say that I have been gratified and surprised by the proofs which they conclusively afford of the ingenuity, originality, and inventiveness of the working men of Ulster; and that in far larger and more pretentious exhibitions I have seen no such demonstrations of these excellent qualities. Surely, the value of your enterprise needs no better assertion than is thus afforded; for without it those qualities would have been undeveloped, and their possessors without the distinction which is so eminently their due. But I must hurry to a close. I cannot, as I have said, speak of the individual works which have given me so much pleasure, but I should fail in my duty if, on such an occasion as this, I did not congratulate you on the success of the great industries which distinguish Belfast, and in which it can hold its place with any portion of the British Empire. One of those industries has been famous since the Pyramids were founded—the great linen industry; and of that industry your province at this moment is, not geographically, but effectually, the greatest centre in the world. The exhibitors have shown with what exquisite skill they can prosecute every branch of it through all its stages—from the green fibre and the preparation of the flax up to the snowy cambric and the marvellous damasks of Ardoyne and Lisburn, which are prized through all the palaces of Europe. On another branch of your trade I rejoice to congratulate you. It has grown into existence since I was a boy, and it has filled the earth with fame. I speak of the construction of machinery, in which I do not think you need dread any competition. In the most distant countries you find your customers—on the steppes of Russia and by the borders of "Old Nile;" and I believe your excellent machines command a market even in England. Only another word. Your shipbuilding, I learn, flourishes amazingly, and you are enabled to make profitable contracts with the Government for iron-clad vessels. This is highly satisfactory—not because you are in relations with the Treasury as receiving bounty or seeking aid, but because you are capable of doing work which it is the interest of the State to purchase. It is thus you have advanced, and thus you will continue to prosper —not through the patronage of Cabinets or parties, but through your own brave self-reliance and energetic self-assertion. I trust it will ever be so, and, if it be, your prosperity, great as it is, is yet only in its infancy. You have reached that stage of progress at which retrogression is not to be feared, save through your own default."

[After our leading article was written and in type, we received the following paper on the same subject, from the pen of a valued correspondent in the northern capital.]

This exhibition has proved a great financial success. It was the only local exhibition held in Ireland preparatory to the Workmen's International exhibition to be held in London early next month, and as such excited considerable local interest. The undertaking was first promoted by public meetings held in August last year, and a general committee of some thirty-five gentlemen was formed. Subsequently, on the 18th of September a working men's committee was formed of sixty-four members, well representing the various trades, and included architects, builders, sculptors, draughtsmen, engineers, designers, &c. Such an organisation was sufficient to get up a really creditable display, had the promoters made their preparations in time. Little, however, was really done until the formation of a small executive committee on the 3rd February last. This committee worked hard in the short time they had to prepare, and what has been done was the result of their untiring zeal. In addition to the ordinary purposes of other exhibitions, it was intended that this exhibition should serve, as far as possible, the purpose of a school of technical education. The various processes of manufacture were to have been exhibited and explained, and every workman employed in the production of the articles exhibited was to have an opportunity of showing his skill in his own special trade. The number of workmen exhibitors, however, was so small it was found impossible to carry this out fully. The processes of manufacture were shown only in a few cases, as, for example, the manufacture of matches and the manufacture of flax, and it was difficult in most cases to distinguish what was really the work of individual workmen.

So far, then, the scheme was not adopted as freely as it might have been by the workmen themselves, who were thereby given every opportunity of displaying their individual skill; and taking into account the influence of the promoters of the organisation under which the undertaking was set on foot, the extensive manufacturers of the locality, the number and skill of Belfast workmen, their exhibition in the Ulster Hall was not anything like what might be expected from them. Indeed, had the exhibition been confined to the exhibits of workmen only, there would be very little that was attractive or promising in the display. For this reason the committee solicited contributions from manufacturers, but the time allowed for preparing articles was so small that few manufacturers availed themselves of the opportunity of exhibiting their goods; hence the producers who so creditably maintained the reputation of Belfast in the great international exhibitions of Dublin, London, and Paris were almost wholly absent or unrepresented, and the display of manufactured goods was confined to such articles as could be at any time collected from the local establishments. The committee also appealed "to the nobility, gentry, and manufacturers of the province for the loan of works of art, pictures, oil paintings, engravings, drawings, photographs, sculpture, antiquities, curiosities, scientific novelties, objects of natural history, flowers, plants, decorations, &c.," and the appeal was readily responded to by all sections of the community, from his Excellency the Lord Lieutenant down to the working mechanic; and the result was that a fine-art gallery was formed that added considerably to the interest of the exhibition, and contributed in no small degree to the financial success of the undertaking.

As the exhibition was mainly intended to encourage working men, the medals awarded were confined to that class; but the jurors were permitted, in cases of special merit, to award certificates of merit outside the working classes. Had this arrangement been carried out, holders of certificates of merit might reasonably consider their award superior to the workmen's medals; but unfortunately the jurors of the several sections did not make their awards on the same plan. Some seemed to consider the certificate of merit a third-class award, while others made it the only and proper award for manufacturers. The result is, that the strangest anomalies occurred: for example, in one class a manufactory—say the Belleek Pottery Works—obtains only a certificate of merit—really the highest award the jurors could make,—while in another class a clumsy bird-cage, the work of some amateur country workman, obtains the same award, because the article is not considered worthy of a medal of the first or second class.

We may pass over section I., which includes "Animal, Vegetable, and Mineral Substances used in arts and manufactures," by expressing the regret of the jurors "that in a section which was intended to exhibit a representation of the rich supply of materials for manufacturers which this province affords, the contributions have not been more numerous. The mineral wealth of the north of Ireland has not been adequately represented; and the collection of iron ores only imperfectly shows the immense extent of this valuable material."

And if we take up section II.—"Architectural Embellishments, Building Materials and Contrivances"—we have a very fair specimen of what the whole exhibition was, and the freedom with which the jurors multiplied awards. Perhaps no town in the kingdom that has made such rapid improvements in its architecture as Belfast, and few districts could compare with Belfast in the variety and value of its building materials, and yet the improvements in construction, modes of ventilation, variety of decoration, and extensive assortment of materials were scarcely represented, and yet the jurors state in their report that in their opinion "a more creditable display of taste, ability, and education could not be produced in any town of equal population in the three kingdoms;" whereas the catalogue shows that if we exclude some chimney-pieces as may be had in any marble yard, a few carvings, and a group of plaster casts, very little else is left. The jurors also state, "the particular object the executive committee have had in the establishment of such an exhibition—viz., the display of talent and industry of the artizan classes—has placed the jurors under the necessity of excluding from the list of prizes a number of most interesting and valuable specimens of work, the exhibitors of such occupying the position of employers of labour"; and yet we find from the published list that every exhibitor, with the exception of four, obtained a prize, the four being—

No. 12. Polished Woods from Canada, exhibited by Chamber of Commerce.
No. 19. Holden's Patent Horse-shoeing—Thomas Holden.
Nos. 25, 26. Teak Framing—J. P. Corry, J.P.
No. 15. Fire-clay Goods—Ferguslie Co., Glasgow.

The whole exhibition, however, proved what might be done in proper time, because, if such as the recent display could be got up in a few months or weeks, there can be no doubt but a really creditable local exhibition could be got up if proper time was taken to prepare for it; and it is to be hoped that the financial success of this, the first exhibition, will stimulate the promoters to undertake at some future time an exhibition worthy of the industry, wealth, and genius of Belfast.

PARAFFIN GREASE FOR GAS-MAKING.

WHATEVER opinions may be entertained respecting the probable future of the British mineral oil trade—whether it be supposed that the oil wells of America are able to meet the steadily increasing demand of the whole world, or whether, as most of the best informed believe, the growth of this universal demand must outreach the possibility of supply from this single source—it is quite certain that there can be no possible prosperity among the British oil masters unless they find a means of utilising their heavy products. Past experience has proved to demonstration that even when the existing works are but half employed they can glut the market with lubricants—that all the avenues of demand for fine lubricating oil, for mixed spindle oils, for hot and cold neck greases, for common black grease suitable for pit chains, cogs, lorries, &c., are choked up immediately the price of burning oil rises sufficiently to induce the oil masters to light only one-half of their fires, and that presently the whole question of profit or loss must depend upon what can be done with the heavy products. This being the case, there can be no better subject for the united consideration and effort of the British oil masters—English, Welsh, and Scotch—than this question. We informed our readers some time ago of what had been done by *one* enterprising Welsh oil master in obtaining a large contract to supply the Dublin Gas Company with black grease at a low, but still a remunerative price. This gas company, which really does supply its customers with gas of high illuminating power, had hitherto obtained from the Leeswood district large quantities of curly cannel, paying a high price at the pit's mouth, then a further charge for carriage to Connah's-quay, and further for shipment from this port (on the Dee) to Dublin. They learned, however, that by distilling the cannel or shale on the spot, then separating the light volatile burning oils and spirit, that there remained behind, in the most concentrated possible form, just the material which the gas-maker requires—that from which the most highly illuminating gas is produced. One ton of this produces as much gas as several tons of cannel, and thus the cost of carriage is proportionally diminished; and carriage being so important an item in the cost of coal for all gas-works situated at great distances from cannel pits, this is a matter of primary importance.

But this is not all. There is another very important advantage gained by the gas-maker who uses the heavy paraffin residuum. One serious objection to the use of cannel, especially the richer qualities, is that, besides the gas which comes over, there is always a certain quantity of vapour which will not continue in the gaseous state, but condenses into a liquid, which rests in every down bend of the gas pipes, and causes obstructions and other annoyances, besides some amount of serious danger when it accumulates in the gasometer, and swims on the surface of the water of the gasometer tanks; for the liquid which thus condenses is the light oil or spirit of the oil distiller—benzine or benzole, as it is otherwise called—which is all removed by the first distillation of the oil master, who supplies the residuum.

Our object in reminding our readers of these facts is to induce the trade, either by individual effort or, better still, by associated effort, to utilise this dull season in pushing this enterprise further. In France and Germany the example of the Dublin Gas Company has been largely followed, and we feel satisfied that it only rests with the oil masters themselves to make the use of paraffin grease, as a source of highly illuminating gas, almost universal in places where cannel cannot be easily procured. All the London and suburban gas companies ought to use it, and would use it if they understood its value. Anybody who has been over the yards of these companies will have seen a neatly-stacked reserve of the richest guality of cannel, which has cost the company nearly 40s. per ton as it stands there. On inquiry it will be found that this is held in reserve for foggy weather, illuminations, or any other sudden increase of demand, and it is thus reserved because it contains so much more gas per ton than any other coal, and that gas of such high illuminating power that some degree of dilution is permissible. As one ton of black grease is not only equivalent to several tons of this choice reserved cannel, but has the further advantage of being capable of *much more rapid distillation*, its value as a reserve is incomparably greater. It bears the same relation to cannel that Liebig's extract of meat does to the beef—and just as the extract can be digested, absorbed, and converted into blood so much more rapidly than the beef can, so can the black grease be distilled and converted into gas with correspondingly greater rapidity than cannel coal.

But this is not the only way in which this material may with special advantage be applied to gas-making purposes. For private gas-works it is as unquestionably the best obtainable material. The great objection to such gas-works is the nuisance of the "purifiers," and their stinking residues of saturated lime. By the use of paraffin grease these would be almost superseded, as the gas thus made is nearly pure. The quantity of lime required, if any, would be reduced to about one-tenth, or the quantity remaining the same, it need be changed only one-tenth as often. The very high illuminating power of gas made from this material (double that of common coal gas) would diminish the quantity of gas required to about one-half, and correspondingly reduce the dimensions and cost of the meter, and all the other apparatus.

All these advantages certainly may be achieved, and by their achievement the use of private gas-works would be greatly increased, but first of all it is necessary that the subject should be better understood than at present; that a well-arranged series of experiments should be made in order to determine the best and simplest method of using the paraffin grease, and the form of retort, &c., best adapted for its use in private gas-works. We have reported the proceedings of various preliminary organisations of oil masters, some of which have probably been very useful, but here is an object for which all the united powers of the trade should combine, and do so *now*, while the trade is quiet, and when proper attention to the subject is possible. We will not carry our suggestions further into detail, or express any opinion as to whether the trade should engage its own chemist or offer a prize, or assist any inventor who may bring forward a promising scheme, or otherwise, but we do most earnestly urge that "something should be done."

In order to operate upon the large gas companies, immediate action is absolutely necessary. Some experiments must be made by those who have not already gone into the subject, and this is the season when there is space and time for experimenting at gas-works. Besides this, the question of contracts for winter supply is now under consideration of the gas companies, and therefore this is the time for directors to be awakened to a sense of the importance of using this material as a reserve. The oil masters should bring the subject at once under their attention, and meet them liberally in the way of supplying samples for experiments, so that, by beginning their investigations *at once*, they may have their arrangements all cut and dried in time for the season of short days, long nights, and London fogs.—*Oil Trade Review*.

THE DESIGN "IN MEMORIAM."

WE print below a paper which has been circulated by Messrs. Lanyon, Lynn, and Lanyon, pointing out the advantages of a two-arch stone bridge in place of the present Carlisle Bridge. We refer on another page to our error in last issue with respect to this design having received the *second* prize.

The *Builder* of the 4th inst., in a short paragraph under the heading of "Carlisle Bridge, Dublin," says:—

> "It has been stated that the design by Messrs. Lanyon and Co. is to be carried out at the estimated cost of £60,000; and the citizens of Dublin are inquiring why Mr. Charles Geoghegan's plan, which would give all they want for £30,000, Messrs. Courtney and Co. having offered to do the work for that sum, should be superseded. We have not yet seen any sufficient answer to this inquiry."

Several of our fellow-citizens who are in favor of Mr. Charles Geoghegan's economic plan for facilitating the traffic over this bridge, have remarked to us that no opinions have been obtained from eminent professional engineers by those who urge that *the foundations of the present structure are insecure*, and therefore would not be able to bear the great weight of iron which is proposed to be placed on them by Mr. G. We trust that when the matter is somewhat more ripe for final settlement, and that it has been discovered where the requisite funds are to come from, fair play will be shown to all the competitors. *We* must be friends of all.

It would appear now that the "Port and Docks Board" *alone* have the power of final decision respecting bridges over the river, and that a large majority of that body are in favor of a *one-span iron bridge*. We understand that the reports, transactions, &c., in reference to the bridge are being printed, and will shortly be issued for the information of the parties interested.

Messrs. Lanyon and Co. say:—

> The problem we have in this design undertaken to solve is—How to construct a bridge the full width of Sackville-street, at a minimum cost, and of the most permanent materials, having a level roadway. a maximum waterway, and one which would achitecrturally harmonise with the principal buildings of the city.
>
> In the first place, we would submit that the bridge is of stone, a material that admits of no question, possessing as it does such superior advantages in every respect, and more particularly in this case, over iron, in its completeness, stability, rigidity, economy, and permanence. In its completeness, by its overcoming all the difficulties of the bridge problem. In its rigidity and stability, by being perfect in both respects—two points that can never be obtained in an

iron bridge, as there must always be more or less vibration, expansion, and contraction In its economy, from its being offered to be carried into execution by one of the first firms in the building trade for the sum of £50,000, which sum includes £6,000 as the value of the angle and other towers, which would, therefore, reduce the cost to £44,000 for the bridge proper—a sum less than any single-arch iron bridge can be put up for. In its permanence, by its being executed in granite or limestone, which, humanly speaking, are everlasting, it being a well-known fact that iron is not durable, and requires constant painting and repairing.

It is proposed to cross the river by two spans of 64 feet each, which affords the following great advantages:—In the first place, the waterway is obstructed to the least possible extent, contingent upon a level roadway and a properly constructed superstructure, as, if the bridge were an iron arch of one span, in order to keep the plates, girders, &c., clear of high water, which would, of course, be perfectly essential to avoid the prejudicial action of brackish and impure water on the metal, it would be necessary to carry the side abutments so far into the river as would in point of waterway be less by some feet than the waterway provided by the two-arch bridge. It has been suggested by some that the central pier must prove injurious, by dividing the scour of the river, and thus endanger the present quay walls, &c. We submit such cannot be the case, as, from the extreme breadth of the bridge, the current must impinge on the abutments, and from thence, of course, rebound again into the centre of the river, at a point but little below the bridge. The projection of the abutments will also have a cushion of dead water along and against the quay walls.

Looking at it in an architectural point of view, the effect is greatly enhanced by the double arch, which gives great character to the bridge, and makes it, as it should be, a prominent feature in uniting the classic and handsome public buildings on either side of the river.

By the adoption of two arches we are enabled to get a perfectly level roadway across from the site of the O'Connell Memorial in Sackville-street, and a bridge constructed on the most perfect principles of stability and economy by the use of stone for the entire work.

We would here venture to suggest that another strong point in favour of the two-arch stone bridge is that all the materials required are native, that the design is by an Irishman, and should be carried into execution by Irishmen, and thus the cost of the bridge would be spent in and for the good of our country.

The towers that form a feature in the decoration of the bridge are not constructionally necessary, and we would suggest that they might be considerably reduced in size, and correspondingly in cost; but some such treatment as these towers would add very greatly to the dignity and effect of the whole structure. Niches are formed in the towers, to receive statues of illustrious men (placing the statues in niches, independent of increasing the effect of the figures, has the advantage of doing away with the appearance of incompleteness which would result unless the whole of the isolated pedestal were occupied). In this way the towers, as architectural features, are complete with or without the statues, which might be added hereafter by degrees. The angle towers are large enough at the base to serve some useful purpose. They occupy positions where public conveniences are much required, and might be applied to this purpose; their interior may be approached by descending a few steps from the footpath, in the quadrant projection, which would thus make the entrance as private as possible; the interior is open to the top. Another most essential point they would serve would be as approaches to the chambers for machinery, &c., and to the sub-way which is intended to be made under the Liffey to carry the large sewage and other pipes through from the south to the north side. This work, it is suggested by the City Engineer, should be carried on simultaneously with the bridge, and thus save the enormous cost of a second cofferdam. The formation of the central pier would, of course, aid in this saving, and be most useful as a means of getting ventilation or even light to the subway.

We propose to carry out the work in sections, and not to take down the present bridge until we open for traffic as great a width of the new bridge as may be equal to the existing bridge, and thus there will be no inconvenience to the public.

SUN STUDYING.

THE observation of the changes which constantly occur in the appearance of the sun, seems now to be the most popular branch of astronomical research, and many hundreds of students make this their principal work. The intensity of the solar rays is so great in an unclouded sky that, except when near the horizon, we cannot bear to look at him with the naked eye, and the intensity is many times increased when the telescope is employed. Coloured glasses have been used for several years past; these stop most of the heat rays, and materially diminish the light. Recently a novel method of dealing with the difficulty has been employed. The object (largest) glass of the telescope is covered with a thin film of silver, which answers the purpose admirably, but is rather an expensive luxury; especially as it renders the instrument useless for any other purpose than for observations of the sun. Another plan is now becoming quite popular: the solar rays are received on a small portion of a mirror, and thence reflected through a lens, on a sheet of white paper, where the image may be studied at leisure without fatigue to the eye. One apparatus used for this purpose gives an image of the sun of more than seven feet in diameter, and renders easy the study of the changes in the form and location of the spots which are now very numerous, this being near the time of their maximum.

In a recent lecture on the subject, Miss Maria Mitchell ventured the prediction that the time is not far distant when the terrible accidents and revolutions occurring in the solar photosphere will be found each morning in the daily newspapers, side by side with the telegraphic intelligence from all parts of our own globe. She is probably right. Viewed as phenomenal changes these variations are of exceeding interest to scientific readers, whose numbers are rapidly increasing; but the record of these revolutions will also be of great practical value when we arrive at a knowledge of these effects on the earth's surface.

Consider for a moment that the sun is (probably) the sole source of light and heat to our globe. He presents to us a surface equivalent to about 569,758,000,000 square miles of perpendicular area. From this we receive on an average of at least 180 degrees of heat, reckoning the absolute zero at 120 degrees below the zero of Fahrenheit, and many physicists have estimated it as much more than this. A large spot sometimes covers one part in ten thousand of the apparent solar surface, which is a reduction of one-third of a degree in temperature all over the earth's surface, and also causes a diminution in the amount of moisture evaporated to descend in the form of rain. Now the limits of useful vegetation are very small, giving a range of barely 50 degrees in the case of cereals, below which they are chilled out of growth, and above which they are parched up. The long continuance of one large spot, therefore, makes a difference of nearly three-quarters of one per cent. in the amount of power by which grain is made to grow. And several of these spots are sometimes seen at the same instant, making in the aggregate a difference of two or three per cent. We know, too, that the general health varies with meteorological conditions. Some years ago the celebrated astronomer, Sir John Herschel, constructed a table of sun spots for a series of years, and compared them with the fluctuations in the price of wheat in the London market. He failed to discover any certain relation between the two, but possibly because the numerous other causes which help to determine the price of wheat were not taken into the account. The indications all point to the probability that many of our most important meteorological conditions will, ere long, be found to vary with the amount of brilliant sun surface presented to us. This ascertained, and the connection known, it will not be difficult to identify general statistical conditions therewith, though we may not be able to apply the discoveries to the determination of local changes.

We are daily becoming more and more cognizant of the fact that scientific research has a vital bearing on the details of practical life. Time was when the philosopher was accounted a vagarist; and the truth is that he generally merited the appellation. Formerly philosophers dealt with theory only, and cared little for facts, or manufactured facts to meet these theories. That was of no use to the world, except as it paved the way to something better; just as the play of the child develops muscle for the work of the man. The scientist of the present day searches for facts, and throws ruthlessly aside the most venerable theory if it does not square with the latest discoveries. The other distinctive feature in modern research, and its crowning glory, is that it is devoted to the improvement of the human race; each new fact as it arises, is sought to be turned to account, and if we fail to immediately perceive "the good of it," we may rest assured that some one else will utilize it, and that speedily. We are thus hopeful that the sun studies of our own day will develop truths of great interest and usefulness, and that though much time is spent in the effort, and some have been physically blinded in the research, it will prove of practical benefit to society, in addition to the mere broadening of our mental powers, and the extending of our knowledge of what is going on in the universe around us.—*American Builder.*

THE CASE OF DOOLIN *v.* DIXON.

WE have been informed that a paper by Jas. H. Owen, Esq., on the subject of this case, published in our No. for 1st of April last, has given offence to some of the witnesses examined on behalf of the defendant. We can only say, on behalf of Mr. Owen and ourselves, that it was never intended by him in writing that paper, nor by us in its publication, to give personal offence to any of the witnesses examined in the case; and if any annoyance has been caused to any of them by its publication, we beg to offer them our sincere apologies, and to withdraw any expression that may have seemed to reflect upon their character or veracity.

THE ROYAL IRISH ACADEMY.

A GENERAL meeting of the members was held on Monday evening, at the Academy House, Dawson-street. The chair was occupied by

The Rev. Professor JELLETT, F.T.C.D.

Dr. Sigerson, F.L.S., read a paper entitled "Further Researches on the Atmosphere." Having mentioned that some of his previous discoveries had been confirmed by later investigators, he proceeded to detail the results of his examination of special atmospheres. His lecture was illustrated with large diagrams representing some of the objects discovered. In "Iron factory air" he found carbon, ash, and iron. The iron was in hollow bombs, about one-two-thousandth part of an inch in diameter. Their shell was computed to be one-thirty-thousandths of an inch thick, and the iron was then translucid. In "Shirt factory air" there were filaments and fragments of linen and cotton with miniature eggs. The atmosphere of threshing and oat-mills had fibres, fragments, starch-grains and spores. "Scutch-mills," as now made, from the character and quantity of the spongy, spiky dust, and its evil effects, he declared to be human slaughter-houses. By a suggested alteration the dust could be sent away from the workers, and many lives and much suffering saved. In the air of "Printing-offices" antimony was expected, and Dr. Sullivan's analysis confirmed the belief. Antimony is probably present to an injurious extent in the air of type foundries. "Stable air" was shown to contain (along with spores and moth scales and ovules) cuticle scales and hairs. Hairs and cuticle were also present in hairdressers' air. Some appalling revelations of the contents of "dissecting hall airs" were made. "Smokers' air"—the smoke was microscopically examined, and found to contain globules of nicotine—a poison. The air inhaled by tea-tasters was found to be a shower of tea drops, each containing fibres, tissue, and globules of a powerfully narcotic oil. Dr. Sigerson concluded by stating the conclusions at which he had arrived with regard to lung functions and contagion.

THE NEW THEATRE IN GRAFTON STREET.

THE Right Hon. the Attorney-General sat in he Council Chamber, Dublin Castle, yesteray afternoon, and delivered judgment in the petition in this matter.

This application is one asking a patent authorising the memorialists—the Messrs. Gunn—to open a third theatre in Dublin, on he ground that (as they allege) the minor heatre in Brunswick-street fails, both in accommodation and entertainment, to meet he requirements of the community; and as egards the larger theatre in Hawkins'-street, upon the ground that the public taste at the present day demands for its gratification a class of performances, musical and dramatic, which the Theatre Royal, Hawkins'-street, does not and cannot satisfactorily supply, and that the advantages to the public proposed to be conferred in the new theatre can be given in it at prices of admission which will render its establishment a decided boon, not alone to the general public, but to persons of refined taste, and yet of means too limited to seek the gratification of that taste at any but moderate expense. The real questions here must be—is it for the public advantage, having regard to all the circumstances, that a third theatre should be provided for the recreation of the citizens of Dublin? and do the persons presenting the memorial now under our consideration offer such evidence of their *bonâ fide* intention and means of building and carrying on a theatre of the proper character, provided the patent for which they apply shall be granted to them? Now, in considering the former of these questions, we have had to regard the fact unfavourable to the memorialists of the refusal, first in 1857, and again in 1867, by our predecessors in office to report in favour of like applications for patents to establish a third theatre in Dublin. It has been argued on the part of the applicants that we should not deal with these decisions as binding us in the same manner as judicial decisions from courts of co-ordinate jurisdiction. We agree in that as an abstract proposition; but if the circumstances were the same, we think we ought to be largely influenced by the conclusions arrived at by our predecessors. The application for the patent has been opposed by three parties—the representatives of the Theatre Royal, the representatives of the minor theatre in Brunswick-street, and by Mr. Vereker, who appeared as counsel for the Exhibition Palace Company. I may dispose of this last opposition by saying that it resolved itself into an application for the postponement of the inquiry, which we thought it our duty to refuse, and subsequent events have fully established the propriety of our decision. The opposition on the part of the owner and lessee of the Queen's Theatre we deem insufficient to induce us to refuse our sanction to the application. In another respect, moreover, the opposition in the mere interest of this theatre cannot prevail. In 1857 an application for a third theatre was made by a Mr. Boswell, and the owner of the Queen's Theatre having undertaken to make alterations and improvements in it, the application was refused; but, the danger of competition being past, the undertaking seems to have been forgotten, and there is no evidence that the promised improvements in the Queen's Theatre have been carried out. Then what is the position put forward by the lessee of the Theatre Royal? His case is that, as regards the production of the drama in general, the house is entirely a failure; that the pantomime at Christmas and the Italian opera in the autumn are the only sources of profit; that in the spring and early summer the receipts are barely sufficient to maintain the company until the period arrives for closing the theatre for the summer and autumn, thus leaving the inhabitants of Dublin substantially without a place of theatrical amusement until the Theatre Royal opens for the costly entertainment of the great Italian opera. Now, all this seems not altogether a satisfactory reason for proposing that no person should be permitted, at his own risk, to supply throughout the year to the citizens of Dublin rational and attractive theatrical entertainments other than the pantomime and the great Italian opera. It is suggested by the advocates of the Theatre Royal that this failure of the Theatre Royal in every species of entertainment but the pantomime and the Italian opera is solely attributable to the hopeless and irremediable want of theatrical taste in the inhabitants and visitors of Dublin. Now, on the part of the Messrs. Gunn, it is said, on the other hand, first, that the lessee of the Theatre Royal fails to accommodate himself to the tastes of the day, and perseveres in the monotonous and unvarying production of what is called the "regular" or "legitimate" drama, an entertainment which is confessedly insufficient to enable a theatre devoted wholly or chiefly to its performance to be successful as a pecuniary speculation. The lessee of the Theatre Royal himself declares that this kind of performance does not "draw" either in London or amongst ourselves; and the fact is lamented as evidence of a deteriorated public taste. This question of taste we do not mean to discuss. We have here to ask ourselves not what ought to be, but what is the dramatic taste of our day. It certainly is not for us to assume the office of guiding the public in its selection of an amusement. Our sole duty and our sole right in the matter is, so far as is practicable, to look to the protection of public morals, and to take what steps we may think necessary and have in our power for this purpose. That done, public taste must follow its own promptings. It is further argued against the Theatre Royal that its internal arrangements are lamentably deficient in regard of the comfort and accommodation of the audience, that it is badly ventilated, its means of ingress and egress entirely inadequate, and the seats so arranged in the boxes as to inflict the utmost personal discomfort on the occupants. As regards the means of egress, it is said they are improved; as regards the ventilation and seats, it has been suggested that they would be improved; but we are of opinion that this improvement should have been long since effected, and we cannot refuse our acquiescence to Dr. Seeds when, in an argument able and exhaustive, terse and condensed, he said that it would be gross injustice to Messrs. Gunn to refuse their application upon the ground that an improvement would be effected in the Theatre Royal under the compulsion of the application which they now brought forward at great expense. But, again, however capable the Theatre Royal may be of improvements tending to increased comfort and accommodation for those attending the performances carried on there, its mere dimensions, it is said, and we think with great force, render it unfit for several of those performances. Assuming for a moment that, by making certain alterations in the house, and by representing the class of dramatic performances in it which the memorialists calculate will fill, or nearly fill the theatre which they propose to build, an equal number of persons might, for a time, be induced to go to Hawkins'-street, that number would not more than half fill the latter theatre. Now, the experience of every one knowing anything of places of public amusement must tell him that nothing renders them so attractive as the fact of a full attendance. Theatre-going people as often ask, "What kind are the houses?" as they inquire, "What sort are the performers?" And a theatre too large for the number of persons who may, in ordinary circumstances, be fairly calculated on as likely to attend its representations, will by that very fact in all probability be deprived of half the visitors which it otherwise would have; and while the large size of the theatre thus tends to diminish the numbers of the audience, it increases the necessary expenditure of the edifice and company, thus rendering the undertaking less likely to be remunerative to its proprietor. But on the part of Mr. Harris, it is asserted that the result of establishing another theatre would be to compel the closing of the Theatre Royal. Now we doubt that we could regard this as sufficient ground for refusing the patent. We should, indeed, in such circumstances, feel the deepest reluctance to recommend, and I would certainly struggle to the utmost against recommending, that the patent should be granted, not merely because of any loss or injury to the present lessee, who has many claims upon the good-will of the citizens of Dublin as to the theatre, but because that theatre has a long train of brilliant associations which it would be a matter of real regret to relinquish. Moreover, it is peculiarly adapted for certain classes of performances which would not suit a smaller house, and which, in a smaller house, would not be remunerative. Still, as I have observed, we doubt that even the certainty that opening this third theatre must have the effect of closing the Theatre Royal would justify us in refusing to recommend the patent now asked for, being satisfied, as we are, that the citizens desire, and have a right to obtain, the chance now offered to them of the establishment of such a place of amusement as that proposed to be established by virtue of it. If the new house is to succeed, to the injury or ruin of the old, it must be owing to what, in public opinion, would be its superior attractions. We are not here, I have already stated, as arbiters of taste. But I may observe, in reference to the assumed necessity of preventing further competition with the Theatre Royal, lest Dublin may lose the great Italian opera, that this opera is a very costly enjoyment, of which, in any circumstances, the great body of the citizens can hope to obtain only a very limited portion, and that it is fairly argued that it would be hard to deprive them for all time of amusements, musical and dramatic, of a highly attractive character, of which they and their families may frequently partake, in order that a comparatively small number of the wealthier class may, during a brief season, have the gratification and advantage of the lyric drama in its highest development. . . . . . . But even were the grounds of opposition to this patent far stronger and more cogent, and the reasons for its being granted less coercive, we should report in its favour, upon the ground that if we were now by our report to refuse this patent, it would be nothing less than an announcement to the citizens of Dublin that reform in the dramatic institutions of the city was hopeless. Twice within the last fifteen years similar applications have been made and refused, and my colleague and I feel that another refusal now by us to recommend that a patent should be granted would establish such a series of precedents for the refusal, that no law officer in this generation in all likelihood would depart from it, and a continuing monopoly would thus be established in favour of the present patentees. We had ourselves to resist the influence of previous decisions adverse to applications of the kind, and we considered that the force of such influence would be much increased by another like decision. The time and circumstances, then, seeming to us favourable for the experiment —for such it must be considered—we resolved to recommend what, beyond any doubt, a large section of the public seem to desire, and what strong arguments have been put forward to prove desirable. The abstract reason in favour of granting a new patent having been established, the propriety of granting it to Messrs. Gunn was the only further question (save as to conditions and limitations in the patent itself), we have had to entertain. When the patent was applied for in 1857, and refused, the applicant, Mr. Boswell, had neither site secured nor capital ready for the proposed undertaking, and, in fact, the then Attorney-General seems to have declined recommending a patent specifically on that ground, irrespective of all other considerations. He very properly thought that such a patent, granted under such circumstances, would secure nothing for the public, and might be made mere matter of traffic by the patentee. But Messrs. Gunn have a site secured, have a large proportion at least of the requisite capital, have a plan of the intended theatre prepared, and an architect of position ready to enter on the work at any moment. Here, it seems to us, we have all the evidence we can require of the *bonâ fide* intention and the capacity of those applying for the patent, and we can take the proper and necessary steps to prevent any but the proposed use being made of it, if granted. We will, therefore, recommend his Excellency to grant to the Messrs. Gunn a patent for the establishment of a third theatre in Dublin, under certain conditions and limitations, however, which we shall now state in a general way. The patent will be limited to dramatic performances, such as are specified in the heading of the memorial signed by the citizens in favour of the proposed theatre. It will authorize only the erection of a theatre upon the site named, and it will contain a clause enabling the Crown to revoke the patent if at any time, in the opinion of the Lord Lieutenant, the theatre became defective in its sanitary arrangements, in its means of ingress or egress, in its accommodation for the public; or if, in the class or conduct of its audience, the nature of its performances, or any other respect, it should prove, in his opinion, not to be a place of respectable entertainment to the citizens of Dublin.

CORRESPONDENCE.

[It is to be distinctly understood that although we give place to letters of correspondents, we do not subscribe editorially *to the opinions or statements set forth in same.]*

CARLISLE BRIDGE.

TO THE EDITOR OF THE IRISH BUILDER.

Sir,—As the confusion of two totally distinct designs, with which our names are associated, has been, and may be again attributed to us—as intended to mislead the present bridge committee and the public,—perhaps you will allow me to correct an inaccuracy which occurred in your last issue.

The design to which the second premium was awarded, in the competition of 1862, was for an *iron* bridge, and was submitted by the Messrs. Lanyon.

The design "In Memoriam" which you published in your last, and referred to as the "second prize design," was for a *stone* bridge, and was submitted by me. No premium whatever was awarded to this design, but the adjudicators referred to it in their report as follows:—"We deem it right at the same time to draw attention to design No. 11 (in stone) — motto, 'In Memoriam,' — and to observe that while it occupies a high place in out estimation as a work of great beauty and ornament, we have felt it incumbent on us to exclude it from competition, in consequence of the greater part of the conditions set forth in the instructions to competitors not having been complied with." It may be inferred from this that but for its being held that this design did not comply with the instructions—being for a stone bridge instead of iron and stone, and for two arches instead of one or three—it would have been selected by the referees; otherwise there would not seem to be any point, either in excluding it from the competition or in referring to its exclusion as well as to its merits, in their report. This design was intended to combine with the more special purposes of a bridge the character of a memorial, the centre of the platform being at the time suggested as the site for the Albert Memorial. In 1868, when the erection of a bridge was again mooted, I discussed with Mr. Foley, in London, the advantages which such a site, if available, would present for the O'Connell Memorial in preference to the one selected for it. Mr. Foley favoured the suggestion, but on his referring it to some members of the O'Connell Memorial Committee, they considered it better not to open the question of a change of site at that time. Now, perhaps, the question might be thought worthy of consideration in connection with the definite selection of a design for the new bridge.

William Henry Lynn.
(Lanyon, Lynn and Lanyon.)
June 6th, 1870.

[The error in printing "*Second* Prize" under the design by Messrs. Lanyon, Lynn and Lanyon, for a *stone* bridge, was not noticed until after the entire impression had been printed. We did not consider it of sufficient importance to induce us to incur the cost of reprinting.]

TO THE EDITOR OF THE IRISH BUILDER.

Sir,—My attention having been called to the illustrations in your last number, I was about to indite a letter to you in reference to them. In the course, however, of some correspondence with Messrs. Lanyon, Lynn and Lanyon, I learned from them that they were not privy to the insertion of their design as being that to which the second premium was awarded. It is possible, therefore, that you may receive a statement from them to the effect.

The judges of the competition (which was unquestionably *bonâ fide*) for the Carlisle Bridge, between six and seven years ago, awarded the first prize to myself and your citizen, Mr. Turner, for our design for an iron bridge in accordance with the terms of the competition. Messrs. Lanyon, Lynn and Lanyon were awarded the second prize for their *iron* bridge.

Should it be determined to rebuild this bridge, I confidently believe that the Corporation will not disturb this decision, and will employ us to carry out the work. Should a stone bridge be more in favour at the present time, we are quite prepared to design and execute one in the same material; but, for obvious engineering and æsthetic reasons, we should not recommend the construction of a solid pier of masonry in the centre of the waterway.

Geo. Gordon Page, A.I.C.E.
London, 11th June, 1870.

TO THE EDITOR OF THE IRISH BUILDER.

Sir,—Will you accept from a non-subscriber to your journal an apology for addressing you upon a matter suggested by a chance perusal of your issue of June 1st. As an architect, the illustrations had some interest for me, and I turned to the article descriptive of them. The narrative of the Carlisle Bridge competition is not encouraging to an architect, but that, sir, is not my point. In all ages statues have been raised to perpetuate the memory of illustrious men, and this commendable custom has given us many perfect works of art. In London, whence I write, it is unhappily notorious that modern achievements of this kind, if they fail not utterly, fail in the *pedestal* which supports them. We meet constantly with caustic censure upon these features by lovers of art in the debates in Parliament and elsewhere. But surely, sir, the authors of the second prize design for the new Carlisle Bridge would "out-Herod Herod" in their treatment of the pedestals!—to make them serve as public urinals, and to claim, as they appear to do, that "these are the very positions to which such conveniences are so suitably adapted!"

Henry Curzon, M.R.I.B.A.
June 5th, 1870.

TO THE EDITOR OF THE IRISH BUILDER.

Sir,—I was much surprised on reading the decision of the Dublin Municipal Council, by which they have adopted the design No. 2 Carlisle Bridge in preference to No. 1, which took the first prize and was selected by the trio of judges, Messrs. Sir R. Griffith, Col. M'Kerlie, and Professor Downing, T.C.D.; again leaving in the shade our own talented compatriot — Mr. Geoghegan, architect and C.E.

Now, sir, in the name of economy, common sense, and decency, if the more elegant design of Turner and Page be not adopted, open the pages of your impartial and influential journal for the discussion and ventilation of this most important subject.

Messrs. Lanyon and Co.'s design for the two-arch bridge is *too expensive, too elaborate*, and *too ornamental* for such a small stream as the Liffey.

I think it should ever be the desire of all faithful and honest Irishmen to encourage and foster *home talent*, in preference to importations from the other side of the Channel, where we all know too well how diligently the oft-repeated adage is enforced — "*No Hirish need apply.*"

Civil engineers, as well as architects, of mark reject all bridges of two, four, or six arches, preferring one, three, or five, &c., being more in accordance with architectural taste and beauty; and the Liffey being a rapid stream at certain portions of the tides, the obstruction and diminution of the waterway from the wide and heavy pier would endanger and will continually cause loss of life by the upsetting of barges and heavily-laden river craft passing up and down stream at the flowing and ebbing of the tide.

I have thus far trespassed on your usual kindness in opening your too indulgent pages, hoping this feeble attempt of a tyro in both honorable professions will lead others of more mature judgment to a friendly discussion as to the superiority (if any) of Lanyon and Co.'s design over those of the other two competitors.

I send my card and address—not for publication.

Qui Vive,
Mem. I. C. E. Lon. & Dub.
Goresbridge, Kilkenny,
June 11, 1870.

RATHMINES AND RATHGAR TOWNSHIP.

The annual meeting of the Rathmines and Rathgar Improvement Commissioners and associated ratepayers was held yesterday morning, at the Town Hall Rathmines.

Frederick Stokes, Esq., in the chair.

Mr. John H. Evans, secretary, read the report, which stated that the Commissioners had pleasure in commencing this year by congratulating the township on the rapid increase of buildings and consequent revenue. The valuation had increased £2,561 for the present year, against £1,522 and £724 in the two previous years. Believing that in some degree this result is due to low and fixed taxation, the board are most anxious to maintain the present minimum, but find very great difficulty in doing so. With the most constant care and economy, and a large increase in the water revenue, they regret to have to show an expenditure exceeding the income by £245; and it will be imperative in the ensuing year to restrict, within the narrowest possible limits, any extra or unavoidable expenditure. The supply of water has been satisfactory, but the increase in consumption is continuous, and the board will have to undertake the construction of another filter-bed, the existing filters being taxed at times to the utmost. The usual annual reduction of the debt by £500 has been carried out, and will be continued in the present season. The board are pleased to report that the bond debt has been renewed for seven years at a reduced rate of interest—4½ per cent., with liberty to pay off £8,000 of the £15,000 now due at any time. In an item over which the board have no control—grand jury—a considerable increase will have to be paid this year, partly owing to a malicious injury, to the extent of £900, having, in a very unusual manner, been placed on the county at large, instead of on the barony, It is due to the Grand Jury, on the other hand, to record, that a very alarming expenditure of £2,900, at Kilmainham Goal, which had been vainly resisted by this board, through their chairman, at the presentment sessions, was rejected by the jury. The Public Parks Act of last session having given power to public bodies to form pleasure-grounds, some progress has been made in acquiring Kenilworth-square for that purpose, on very favorable terms; but the matter remains in abeyance, in consequence of the objection of one or two inhabitants of the square, who fear the admission of the public. The project is, however, likely to be eventually carried out. Two movements have been made by the Dublin Corporation to involve this district in fresh burdens. One attempt was to effect the purification of the Liffey, by levying part of the cost on the adjoining municipalities, who do not discharge into the river. While the board do not admit that their sewage pollutes the river, they will be willing to obviate any just complaint, but do not desire to be united with the Corporation in a scheme promoted by them. The other—to build a new bridge in lieu of Carlisle-bridge, at the cost, in part, of the rural districts. As, however, this latter work rests with the Port and Docks Board, and not with the Town Council, the board do not apprehend any needless expenditure. In both cases every effort will be used, in conjunction with their neighbours, to prevent any unjust burdens. It is again pleasant to acknowledge the prompt and cheerful payment of the rate, without any law proceedings, except in two cases. £7,710 has been collected out of £7,721 assessed.

On the motion of the chairman, seconded by Mr. Alex. Parker, the report and statement of accounts were adoptsd.

Mr. G. W. Shannon said that it was a pleasure to him and the other ratepayers to come there year after year to congratulate each other on the progress of their magnificent township. That township was the most prosperous of the Dublin ones, and in it during the past year there had been an increase of £240 in the property valuation. This was one of the effects of the determination not to go beyond a 2s. rate. Like all Irishmen he had a grievance which he should bring before the meeting. It related to that part of the township of which he was a rate-payer—Leeson-park. In that important district, with its beautiful church and asylums, and which did not owe one penny, there had been no asphalting applied to the paths, whilst in the east side of the township there had been over £300 expended for that purpose. No doubt the paths were well gravelled, but the inhabitants wanted asphalte. In conclusion, he had to repeat how much the ratepayers were indebted to the chairman and the Commissioners for their assiduity in doing the business of the township.

Mr. Joseph Maguire was anxious, as a leaseholder in Kenilworth-square, to say that he, in common with most of the residents, with the exception of a few crotchety persons, did not object to its conversion into a people's park, provided it was not thrown open on Sundays, and that no buildings were erected in it. He thought that a committee should be appointed from the board to confer with those having interests in the square, and he thought that the objections of a few persons might be removed. If that were done, he would give every aid in his power to carry out the intentions of the Commissioners.

The Chairman said he was obliged to the gentlemen who came there that day and discussed the affairs of the township with such good temper. With regard to the asphalting of the paths, a rule had been made that no district should be completely asphalted until all had one side pathway completed. In Chelmsford, Sandymount, and Rathgar districts the ratepayers had voluntarily submitted to an extra 6d. rate, which they had very wisely applied to the asphalting of their paths. There was a special resolution of the board that any district which paid half the expense should have asphalte laid down, but until there was something of a margin in their funds they should not go too fast. With regard to what Mr. Maguire had brought before them, he could assure all present that the Commissioners were not going to press on anything that would be opposed to either the will of the majority or minority of those having interests in Kenilworth-square. At the same time, it would be disingenuous to hold out the idea that if the square were converted into a people's park it would be closed on Sunday. The act would not allow that to be done, and the only building that would be erected would be a lodge-house. With regard to the proposed rebuilding of Carlisle Bridge, it was unfortunate that, if it were carried out, the law was so that the five townships would have to pay a share of the expense. He took that opportunity of stating that the Corporation had nothing to do, beyond expressing an opinion, with the rebuilding of Carlisle Bridge, and nothing to do with the collection of money for that purpose—all that lay with the Port and Docks Board. The Commissioners were, however, strongly of opinion that the bridge was well enough as it was. It was not the narrowness of the bridge that caused the inconvenience complained ef—it was the transverse nature of the traffic leading to it. Should a new bridge be decided on, it should be one of a single arch; but, judging from the usual results of Corporation estimates, they might rely on it that the work would cost much more than had been stated as the probable expense. With regard to the sewage question, they might have to prepare for some expenditure. It was true that the outfall from the township did not pollute the Liffey, as it fell into the Dodder, whence it was carried to sea below the city. It may become requisite, notwithstanding, to arrange with the Pembroke Township Commissioners, so as to carry the sewage farther out into the bay. As to the poor rates, he could see no prospect of their becoming less. There had been a constant tendency to throw burdens on the poor rates, such as the support of hospitals, &c., and they might be thankful that a rate of 1s. 2d. was all that they had to pay. For his part he did not like the plan of union rating, he would much rather prefer a national rating, which, at a uniform rate of 10d. in the pound, would produce a sum sufficient for all purposes. In conclusion he would advise the ratepayers not to allow their expenditure to reach higher than 2s. in the pound, and he promised that the commissioners would carry out all their wants so soon as they got their debt paid off.

ANCIENT WALL-PAINTING IN ROME.

THE Emperor of the French, as is generally known, acquired some time since, by purchase, the ground, and all that remains upon it, of the once famous palace of Augustus Cæsar on the Palatine Hill. Numerous valuable objects of art have been recently found among the ruins, but the most important discovery is that made on the walls of three continuous apartments, assumed to have once been bathrooms, on which some admirable pictures were painted in fresco. These pictures have been copied by a French artist, M. Layraud, and the reproductions exhibited in the *Palais des Beaux Arts*, Paris; the frescoes themselves, to the extent of five fragments, have also been taken to Paris, and will be set up in a room of the Château de St. Germain, which is also to contain other objects derived from the same source.

M. Layraud's copies occupy three large canveses and three of smaller dimensions; the subjects of the principal pictures are as follows:—The first represents a street scene: from the door of a house a female has just gone forth, followed by a young servant carrying in her hand a fruit-basket. Above the doorway is a kind of balcony, over which a figure is bending to see what goes on below. At the balcony of an adjoining house appear two females. On the left of the composition rises a house of several storeys: a colonnade supports a terrace to the height of the first storey, and on this terrace we see two figures.

The second subject is taken from the mythological narrative of Polyphemus and Galatæa. The scene lies near the sea-shore, and a short distance from the mouth of a river which winds its tortuous course till it is lost in the horizon: a bright sky is spread over all. The banks are strewn with Cyclopean blocks, round which the blue water surges into white foam. One of these blocks seems to have recently served for a sacrificial altar, for it appears to bear the remains of a fire; and behind it is seen the upper half of the form of Polyphemus: the deformity of the giant is skilfully dissimulated by the artist, who, while presenting the ordinary features of the figure, has, under the transparency of the skin, concealed the eye of the Cyclops. The face of Polyphemus expresses the tenderness of grief. In the rear of the giant is a cupidon without wings, bound with cords or reins. Galatæa, her hair dishevelled, and her person half nude, is hastening away on a marine horse: patting the neck of the noble animal, she looks at her lover with an expression half thoughtful and half alarmed. Two river-nymphs appear above the water, gazing curiously at the unwonted sight.

The third convas introduces Io, Argus, and Mercury: the name of the deity Hermes is written in Greek characters at his feet. Io is seated at the foot of a high column, on the summit of which is a statue of Juno; on the right is Argus, armed with a sword and lance; on the left Mercury, with his *caduceus*, or wand, and wearing the traditional cap or bonnet. The composition is one of noble simplicity, yet fine in effect; the feeling that pervades it is that of exquisite delicacy: these three figures have an admirable and eloquent expression. Io, her left hand laid upon her heart, and her head turned a little on one side, lifts her eyes heavenward with a look of tenderness and resignation. Here, as in the Polyphemus picture, is the perception of beauty: Io is represented without horns, and Argus has not a hundred eyes; the guardian, watchful, almost threatening, has his attention fixed on Io, who appears to understand that the hour of her deliverance is come when she sees Mercury at hand.

Two of the smaller canvases show respectively a sacrificial ceremony and one of divination. The sixth is a scene in which the house of Livy, with its area of white mosaics, occupies the foreground. In the whole of these works we have most interesting examples of Roman art as practised 2,000 years ago.

LECTURES ON PUBLIC HEALTH.

THE subject of Professor Cameron's concluding lecture at Royal College of Surgeons was "The Zymotic Diseases and their Prevention." The zymotic diseases were scarlatina, fever, small-pox, whooping-cough, measles, and several others. They did not originate spontaneously, but were communicated from the disease to the sound. The zymotics were also called preventible diseases, because they were capable of being eradicated by hygienic means. They caused nearly one-third of the deaths which take place in the United Kingdom. On the subject of disinfection, Dr. Cameron stated that if the clothes worn by persons labouring under infectious diseases—measles, scarlatina, &c.—were disinfected, and their rooms cleansed and purified, the ravages of the zymotics would be greatly lessened. One of the most effectual disinfecting agencies was air heated to 400 deg. The Corporation had erected at Marrowbone-lane a chamber in which clothes and bedding were disinfected by hot air, and at purely nominal charges. It was greatly to be regretted that the public did not make greater use of this chamber. The disinfection of rooms was effected by removing all the furniture and thoroughly cleansing it, taking off the paper and scraping the walls and ceiling, and then setting free chlorine gas or some other disinfecting agent in the room. A quart of oil of vitriol poured on two or three pounds of chloride of lime and mixed with a little water, generated sufficient chlorine gas for the purification of an ordinary bed room. The room should be closed up for twenty four hours during the purifying proceedings, and afterwards should be well ventilated by keeping the doors and windows wide open for a few days. The fumes of burning sulphur and the gas set free by pouring nitric acid upon copper turnings were also, especially the latter, powerful disinfecting agencies. For sewers and the purification of cesspools, bilge water, and stagnant accumulations of water generally, chlorides of zinc and iron, and sulphate of iron were useful purifiers, but the best, and perhaps the cheapest, was carbolic acid or carbolate of lime. A mixture of sulphate of lime and carbolate of lime, termed M'Dougall's powder, was very efficacious. Condy's solution, or permanginate of pot-ash, was an excellent sanitary agent. It had one great advantage—that it did not give off irritating fumes or vapours, and therefore it could be used in the sick room. Spread upon saucers, it served to destroy the organic matter of the atmosphere, probably because the motions of the air constantly renew the portion in contact with the solution, which is purified and replaced by another portion of air requiring purification. The merits of charcoal and other disinfectants were also explained, and a great amount of interesting information on the subject of disease preventing given.

THE RAILWAY PURCHASE BILL.

THE following is an abstract of a bill to authorise the purchase, regulate the working, and facilitate the construction of Railways in Ireland, prepared by the Mansion House Railway Reform Committee, and to be brought under the consideration of the Municipal Council by Mr. Norwood, on Friday, 17th inst.

After reciting the Act of 1844, and power therein contained on the Treasury to purchase the railways therein mentioned after 21 years from the 1st of January next after the passing of the special Act, the bill provides:—

That the Treasury be empowered to purchase railways and canals, as in Act of 1844 and this Act; that the parts of the Act 1844, restricting purchase to within 21 years after date of the special Act, and limiting the scale to 25 years' purchase, be repealed; that the railways and canals shall vest in 12 trustees, to be incorporated by the name of "The Trustees of Irish Railways and Canals," two to be named by her Majesty, and 10 appointed by the Act, who are two continue for seven years.

The Treasury, by notice, shall require railway and canal companies to sell them, offering such purchase-money as they shall consider just, which offer shall be conclusive on the company unless proprietors of more than one moiety of the share capital shall, within two months, reject the offer, in which case the difference to be decided shall be left to arbitration. Referees may award more but not less than 25 years' purchase.

The Commissioners to levy such tolls and charge such fares as they shall think fit, provided they do not exceed the tolls and fares mentioned in Schedule No. 1.

The trustees may apply for Parliamentary powers to construct new lines, and may assist landowners or land districts in making new lines, the trustees to have exclusive control over the railways and canals.

The trustees, with the approval of the Treasury, shall appoint three commissioners of management, one of whom at least shall have been a director of a railway company, another a traffic manager, and the third an engineer.

Their duties shall be to manage the railways, and in case of difference of opinion, to be controlled by trustees, who are not to interfere except in such cases.

The trustees are empowered to appoint and remove officers, except the following, to be appointed by and responsible to the commissioners of management, viz.;—Assistant and resident engineers and locomotive and carriage superintendent, secretary of commissions, and office clerks, inspectors, station-masters, booking-office clerks, guards, &c.

The trustees may borrow money and convert the amount borrowed into stock with the approval of the Treasury.

The Commissioners for Reduction of National Debt and Treasury may make advances by way of loan, to the trustees. Deficiency in repayment of sums lent, or in payment of interest, to be guaranteed to the Treasury by a "deficiency rate," on lands rated for relief of the poor, and chargeable with income tax, schedule D of Income Tax Act.

The Treasury to account to Parliament each session.

The Treasury may give compensation to officers, &c., who shall be discontinued by virtue of this act.

Part 2 enables associated railway companies, with the aid of landowners and land districts, to assist the trustees in extending railway communication, and may apply to them for aid in completing or extending lines; and may for that purpose apply any portion of the money at their disposal under this act.

The Board of Works may grant an absolute order in the first instance for the purposes in this act, and the act of 1864 mentioned.

MISCELLANEOUS.

THE HALFPENNY CARD POSTAGE.—The small but important extension of the promised halfpenny postage which the Postmaster-General announced in the House of Commons recently will do much to develop the usefulness of the department as the message-bearer of the public. We urged some time since the importance of the suggestion, which is one derived from continental experience. A card of a convenient size for postal collection and delivery will be issued, impressed with a halfpenny stamp. These cards will be just large enough to contain a notice or a message. The message, which may be written or printed, as the sender chooses, will be on one side of the card, and the address of the person to whom it is sent will be on the other side; the cards will be posted and delivered in just the same way as letters. It is easy to see to what numerous uses this new convenience will be put. Even now the post in the great towns is greatly used for messages, though every message involves the use of paper, envelope, and stamp. The postage cards will involve nothing but writing the message on one side and the address on the other, and if the Post Office is quick and punctual in their collection and delivery, they are sure to come into very extensive use. The only inconvenience about them will be, that the message must necessarily be an open one; but of the scores of messages a head of a family has to send, very few need a envelope, and when they do so a sheet of paper and a penny stamp will be used as at present. We are glad to record this promise of further accommodation as a proof of the desire of the department to consult and serve the convenience of the public.—*Daily News.*

The annual excursion of the Royal Institute of the Architects of Ireland will take place on the 28th inst. We understand the places to be visited are the Ruins at Kildare and the Fort of Dunamase.

It has been estimated, after giving a good deal of attention to the subject, that the whole amount of fortification wall in China, if put together, would build one 20 feet high and 10 feet thick entirely round the globe, and would require 5,000 men to work steadily for 2,000 years to accomplish the work. The walls of Pekin are wondrous structures, and there are many others like them, to say nothing of the great wall on the frontier.

BELFAST EXHIBITION.—The medals (silver), which were designed and manufactured by Mr. Thomas Brown, Rosemary-street, are of chaste and elegant design. The premium certificates were also very tastefully got up. Across the head of the sheet, in an oblong panel, is a carefully-drawn allegorical composition representing the figure of Belfast murally crowned, and holding in her hand a distaff, inviting the different trades and professions to enter into competition. The first to respond to the invitation is the representative of the staple trade of the province. A female holding a youth by the hand, and, bearing a spinning-wheel, advances towards her. Behind strides a sailor, with the model of a ship, typical of shipping and shipbuilding. Then comes architecture, attentively listening to an engineer, who is explaining the merits of the machine he bears. A disciple of Pallisy, carrying a couple of vases, winds up the procession on this side. On the left, first comes a representative of the printing, bookbinding, and stationery trades, carrying a book. Next come music and painting, behind them advances agriculture and floriculture, each bearing the products of their respective labours. The Belfast motto, "*Pro Tanto Quid Retribuamus,*" which may be translated, "For all those things which we have received, what shall we give in return?" comes in very appropriately under the figure of Belfast; while above, in a line stretching along the top, is the scriptural quotation, "The earth is the Lord's and the fulness thereof." The arms of Ulster and Belfast are placed at opposite ends of the panel; and at the bottom of the sheet, opposite the signatures of the Mayor, as chairman, and the hon. sec., is the seal of the exhibition committee, which is simply the arms of Belfast, with an appropriate legend, and is identical with the silver medal awarded. The entire design has been invented and carried out by Messrs. Ward, Brothers, in the highest style of artistic work.

LABOURERS' COTTAGES: ARCHITECTS WHO KEEP THINGS TO THEMSELVES.—Decent dwellings for farm labourers are being built on the Dudmaston estates, near Bridgnorth, for the Rev. F. H. Wolryche Whitmore; at Caynham Court, Ludlow, for Sir Wm. Curtis, bart.; at Rowfant, Sussex, for Sir Curtis Lampson, bart.; at Jermyns, near Romsey, for Mr. R. G. Linzee; and at Kirby Muxloe, near Leicester, for Mrs. D'Oyly. These works are being carried out from the designs of Mr. Birch, architect, who gained the Society of Arts' premiums for such designs. Each cottage will contain a living-room, three bed-rooms, entrance-porch, scullery, pantry, fuel-store, piggery, privy, cesspit, and ashpit. Architects who are afraid of having their plans published may take a lesson from these cottages. When Mr. Birch obtained the premium, he gladly availed himself of our pages for our publication of his drawings. Another architect who was asked to afford facillities for the publication, about the same time, of his designs for such cottages, was "not such a fool," he said, "as to give the public the benefit of his plan for nothing." What was the result? Mr. Birch has been engaged all over the country carrying out the plans he had frankly thrown open, while the careful gentleman, who was "not such a fool," has never been heard of since.—*Builder.*

A NOBLE GIFT.—The sum of one thousand pounds was a few days since left at the bank of Messrs. Ransom, Bouverie and Co. for the British Hospital for Diseases of the Skin, 56, Great Marlborough-street, W., and 18A Finsbury-square, E.C., from V. S. T.

At a recent meeting of the Institution of Civil Engineers, London, Mr. C. B. Vignoles, F.R.S., President, in the chair, the following gentlemen practising in Ireland were elected members thereof:—Mr. John Bower, surveyor for Carlow County; Mr. J. B. Farrell, surveyor for Wexford County; Mr. John Hill, surveyor for Clare County; and Mr. Edward Manisty, Dundalk and Greenore Railway Pier and Harbour Works.

A LARGE SUSPENSION BRIDGE.—The proposed suspension-bridge over the Hudson River, near New York, will extend across the river from Fort Clinton, on the west side, to Anthony's Nose on the east, with one clear span of 1,600 ft. and an elevation of 155ft. above high-water mark. The total length of the bridge, including the approaches, will be about 2,500 ft. The entire structure will be composed of steel combination truss and cable work, of great strength and graceful appearance. There will be four systems of twenty cables deeply rooted in the rock and abutments of the towers on either side of the river. Each cable will be about 14in. in diameter, interlaced and secured by innumerable smaller cables, and will contain altogether 70,802 miles of steel wire. The estimated weight of the iron and steel in the bridge will be about 17,000 tons, and the total suspended weight 9,651 tons. For the towers and approaches, 59,084 square yards of solid masonry will be required. It is believed that the bridge when completed will be able to stand the aggregate weight of sixty locomotives, or more than six times the weight that can ever be crowded upon it at one time.

WHERE THERE'S A WILL THERE'S A WAY.—An American paper tells the following anecdote of a will case which made a sensation in court. The barrister was cross-examining a witness, who was called to depose to the authenticity and formal execution of the testament, and extracted from him that he had witnessed the testator's signature, and had seen the document sealed. "With red or black wax?"—"With red." "You say you *saw* the seal affixed with red wax?"—"I did." "Where was the testator at the time?"—"In bed." "How long was the piece of sealing wax?"—"Between three and four inches." "Who handed it to the testator?"—"I did." "Where did you take it from?"—"From a writing desk on the table." "What was it lighted with?"—"A bit of wax taper which I took from the same place." "Who lighted the taper?"—"I did, with a match I took from the mantel-shelf." Here the lawyer paused in his cross-questioning, and fixing his eyes on the witness, with his thumb on the seal of the will in dispute, recapitulated point by point the evidence just given, and asked him if it was correct. "Yes, sir." "Gentlemen of the jury," said the advocate, "I beg to inform you that the seal in question is a *wafer!*"

THE AMERICAN RUBBER STAMP.—An American, named Stetson, has invented an elastic stamp made of india-rubber, which is said to be an improvement on metallic or other hard stamps for certain purposes. The design is formed on the india-rubber, and the stamp is useful in cases where metallic stamps would be useless. For example, it can accommodate itself to any irregular form or uneven surface, and can even stamp "round a corner." In proportion to its elasticity is its special value. It does not indent the impressed surface, and produces soft and delicate impressions. The cost is small, and the durability great.—*Builder.*

THE DETROIT RIVER TUNNEL.—A tunnel is about to be cut beneath the Detroit river, for railway conveyance between the Michigan Central Railway and the Great Western of Canada, to do away with the ferry-boats. The tunnel company has been organized among the proprietors of these railways, and the Canada Parliament has passed an Act for the work. Mr. E. S. Chesbrough, city engineer of Chicago, has prepared the plans and estimates. The substratum is stiff blue clay, The length of the two parallel tunnels to be made from the Detroit to the Canada portal will be each 8,568 ft. They will be cylindrical, and 50 ft. apart; interior diameter of each 18 ft. 6 in. The shell will be of brick masonry, 2 ft. thick. The grade on each side of the river will be 1 in 50, with 1,000 ft. level below the river. The estimates for the entire cost of tunnels and approaches, with steel rails, &c., amount to 2,650,000 dollars.—*Builder.*

NOTICE.

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Ancient Buildings.

FEW countries there are richer than Ireland in the ruins of ancient buildings, and no country the climate of which is so unfavourable to the preservation of such ruins. These facts indicate the degree of perfection at which the building art obtained in Ireland at a very early period. The ruins themselves indicate the great resources, the purpose, power, and character of the people for whose use and policy these monuments were intended for every-day use and occupation. Great as are these landmarks of the remote past, it is not with a view to develope the labours of the antiquarian that we write of them here. Our purpose is to make these ruins objects of study of an utilitarian and totally different character to the objects before the antiquarian. Our readers throughout Ireland will find subjects for study in the ruined castles, monasteries, and other like buildings within convenient distance; and so the observations which we are about to make will stimulate our younger constituents to a further inquiry into the art of building, of which art these ruins are examples of very successful practice. Against the violence of the seasons and climate these monuments of antiquity maintain the expression and definition of their lines and features with complete perfection. Looking on the venerable piles we may pause and ask, Do we *now for certain* erect buildings which will withstand the destroying influences of climate in extent of time and service as these withstood those influences since their erection in the remote past?

To answer this question with reasonable accuracy we must first consider and compare the materials of the ancient and modern erections, and the manner in which the parts were and are applied to one another. In an examination of the ancient buildings—particularly castles used as court residences—it may be observed that the sheeting on the centering for the erection of winding stairs and other arched passages, in masonry, was made of wicker-work hurdles. In many cases the hurdles were covered with a thick coat of mortar, in which the stones were laid. The soffit of these arched parts shows the lines of the sheeting with as perfect definition as if the erections were put up within the last few years. In most of the ruins the building stones used are of an inferior description as regards form and size; but the mortar used by the ancient builders is as superior to that used by modern builders, as the stones used by the latter are superior to those used by the former. In the quality of the mortar mainly lies the *success* or *failure* of the erections; for it may be observed that the mechanical arrangements observed in the erections are less perfect in the ancient than in the modern structures. Therefore, the great and utilitarian interest we seek to promote by a study of these old ruins—which so successfully attest the advantages of a correct and complete knowledge of the art of building—comes to centre in the quality and character of this superior mortar. The mortar of these ancient ruins is most distinguished from the mortar of modern buildings by the absence of indications of metallic oxide, particularly that of iron. This oxide is, of all others, the most objectionable because of its irrepressible energy in every situation, so that materials for building purposes should be selected with a view to its exclusion. The evils attending the admission of oxidising minerals into buildings seems to have been well known to the ancient Irish; for we find, as already stated, the mortar of the ancient buildings, to which we direct attention, free from such oxides, particularly that of iron.

We do not propose to go, at present, into the operations for making mortar; but we shall draw attention to a few leading considerations, which will facilitate and make clear an approach to this important preparatory part of the art of building in masonry.

In the usual words of the specification, the materials to be used are, "*well-burned lime* and *clean sharp sand*." Now these words in the specification are generally not correctly read or fully understood. "*Well*" means "thoroughly," and *clean* must be read as chemically clean — *i. e.*, free from *fouling* matter. "Clean" in the washerwoman's sense—*i. e.*, free from *soiling*—is for the purpose altogether inadmissible. Therefore, if sand contains metallic ore producing oxide on the surface, or if it be intermixed with organic matter, the sand will be chemically *foul*. The use of such sand for the purpose of making mortar is a practice which should be strictly avoided. If the sand be *fouled* by the admixture of organic matter *only*, the *fouling* may be discharged by washing the sand in a running stream of clean water. Fouling by metallic oxide cannot be discharged; and therefore the unsuitability of such sand for building purposes. Here we may observe that *all* pit sand should be washed, and *all* sand showing metallic oxide, particularly oxide of iron, should be rejected. For—

If when sand is *fouled* by organic matter, which is held as a film on the surface, the lime in contact with the *fouling* matter is rapidly decomposed, which increases with the lapse of time, continues to diminish the surface in intimate contact. From this cause failure must necessarily result.

If the sand be *fouled* by metallic oxide—say oxide of iron,—this salt will be delivered on the surface with which the lime should be in intimate contact, such contact is prevented and destroyed by the rust coating which increases with time. This cause also produces evil results of a most serious character.

From this it may be seen how important it is to exercise the greatest caution and care in selecting the sand for making mortar intended for permanent erections.

The progress and advancement of the experimental sciences have placed in the modern builder's hands many decided advantages over the ancient builder. The ancient builder was obliged to build on clear upland and mainly on clear rock foundations, so that the mortar of the whole structure might be exposed to the free action of the atmosphere, and so secure carbonic acid to fix the lime in the mortar of the entire building. In wet situations and in damp or deep foundations, the mortar of the ancients signally failed — hence the situation they selected for their edifices.

There is no limit to the use of mortar in the modern practice, for, thanks to the application of science to art, hydraulic cement is found to be a successful mortar in moist as well as in dry situations.

It may be of interest to observe that, here also, material containing metallic oxides, particularly that of iron, is altogether unsuitable for the manufacture of this cement. Failing from any other cause is impossible, as the cement is burned in a kiln before it is powdered and prepared for use.

From these considerations the explorer of the ancient Irish buildings will perceive that the road to excellence for the modern as well as for the ancient builder is to keep his mortar free from *fouling* by metallic oxide or organic matter, and also to use stones free from like fouling, particularly fouling by metallic oxide.

ENTRANCE TO THE NEW CATHOLIC CEMETERY, BELFAST.

With this number we present a double-page illustration of the entrance-gates (now in course of erection) at the new Catholic Cemetery, Milltown, Belfast, for the Right Rev. Dr. Dorrian, and to which we called special attention in our notice of the drawings at the recent exhibition in Belfast.

The materials which are being used are—for the general walling, white Scrabo stone from the quarries of Messrs. Ritchie and Jackson, in uncoursed ashlar work, "pitched." The quoins, weatherings, plinths, copings, &c., are of Dungannon stone, and (red) Dumfries sandstone has been introduced sparingly in bands, &c. The shafts in jambs are of Tullamore blue limestone, rubbed.

The carvings (except sculpture in tympanum) are being executed by local carvers, from full-sized drawings and sketches by the architect.

The works are being executed by Messrs. J. and J. Quiles, builders, of Great Victoria-street, Belfast, under the superintendence of the architect.

MR. WILLIAM LEWIS'S DESIGN FOR CARLISLE BRIDGE.

Our second illustration with this number is a design by Mr. Wm. Lewis, C.E., Leinster Chambers, for widening Carlisle Bridge, and providing safe accommodation for cross traffic. The author suggests some novel and clever ideas for the carrying out of this important work in our city. The drawings, &c., have been for some weeks in our hands, and it is matter of regret that we have delayed producing the perspective until now. Our readers will find a full description of this design on another page.

NEW CHURCH AT CASTLEROCK, CO. LONDONDERRY.

This church is nearly completed. It is in the Early English style, and consists of nave, with apsidal chancel; north and south transepts; organ chamber; robing-room, &c. Black stone (peculiar to the locality) has been extensively employed in the work; but this is relieved by broad bands of white Glasgow stone, so that the church presents at once a substantial and lively appearance. A fine tower, in which it is intended to place one or two bells, rises from the north-west angle, and the spire is carried to a height of 95 feet, and surmounted by a handsome vane. Visitors to the sea-side are at once struck with the external beauty of the building, and a glance at the inside is sufficient to show them that it is altogether in keeping with the outside. The walls are lined with Belfast brick, with string-courses; and, in order to guard against damp, a small space has been left between the brick and stone walls. The appearance of the brick inside is not in accordance with the taste of some persons who have visited the church; but, if any change in this respect be considered desirable, it can be easily made. It is said, however, that the brick walls have a favourable effect on the tone of the organ, and, we suppose, on the voices of the congregation. The quoins and arches of the windows and doorways are of Glasgow stone. A handsome moulded and cut stone arch separates the chancel from the nave. This arch is supported by columns, and has moulded caps and bases. Cut stone, somewhat plainer in character, has also been employed in the arches of the transepts and organ-chamber. The roofs of the nave and transepts are open to the collar-ties, and closed on the under side of the rafters, and the principals start from cut-stone corbels. The design of the chancel roof is more elaborate. Curved and moulded ribs start from columns of cut stone, and these are embellished with moulded caps and bases. All the exposed portions of the roof are either stained or varnished. The nave passages are laid with red and black Staffordshire tiles, and some of the richest patterns of Maw's encaustic tiles are used in the chancel floor. The chancel is also enriched by stained-glass windows, at the expense of Lady Bruce. An inscription on the centre one shows that it has been erected "in memory of General Sir Arthur Benjamin Clifton, Bart., G.C.B., K.C.H., who died March 7th, 1869." The deceased baronet was uncle to Lady Bruce. Our Saviour's resurrection and ascension are represented on the principal windows. The sashes in the openings of the north, south, and west walls are of iron, and are filled with cathedral glass. A beautiful Caen-stone pulpit has been presented to the congregation by Sir John Musgrove, Bart., a member of the Clothworkers' Company. Immediately under the pulpit-desk is carved the appropriate text of Scripture—"Preach the Gospel to every creature," and underneath are the emblems of the four Evangelists—a man, a winged ox, a winged lion, and an eagle. Surmounting the base are the words, "Honour all men; love the brotherhood; fear God; honour the King." The communion-table is furnished with a rich cover, and inside the rails, which rest on brass standards, are two splendid Glastonbury chairs, which were carved by Lady Bruce, who has presented them, as well as the cover, to the congregation. The building is heated by means of a hot-water apparatus, procured from Messrs. Musgrave, Brothers, of Belfast. The pews and roof are open, and of stained memel. A Scotch freestone font is placed in the west of the building. The lectern is of brass scroll-work, and the reading-desk is made of oak, at the carving of which the Rev. James Armstrong, incumbent of Castlerock, assisted. Pews for the accommodation of the members of the Clothworkers' Company have been erected in the north transept, and the south transept is occupied by pews for Sir H. Hervey Bruce and his family. The organ-chamber opens into the south transept, which may be used for the accommodation of a choir. The entire cost of the church and fittings, as they now stand, amounts to about £3,000. This sum does not include the handsome parsonage that has been erected on an adjoining plot of ground. Sir H. H. Bruce, Bart., gave the site free for ever, and the worthy baronet and Lady Bruce were also munificent contributors to the building fund. The design was furnished by Mr. F. W. Porter, London; and (under the superintendence of Mr. Wm. Hunter) the works have been most satisfactorily carried out by Messrs. G. and R. Ferguson, builders, Pump-street, Derry.

THE ARCHITECTURAL ALLIANCE.

THE ninth annual meeting of the Alliance was held on Wednesday, 22nd ult., at No. 9, Conduit-street, London. Mr. T. R. Smith in the chair. The following delegates were present: Mr. Thomas, Mr. Rickman (Hon. Sec. of the Alliance); Mr. J. D. Mathews and Mr. R. P. Spiers, as representatives of London Architectural Association. Mr. J. R. Botham, of the Birmingham Architectural Society; Mr. H. H. Statham, jun., of the Liverpool Architectural Society, Mr. T. Oliver, of the Northern Architectural Association, and Mr. T. C. Hine (Vice-President of the Alliance), representing the Nottingham Architectural Association. Mr. Thomas Drew (Hon. Sec. of the Royal Institute of the Architects of Ireland), was also present, as a visitor.

The secretary having read the minutes of the last meeting, they were duly confirmed.

Mr. Drew said he had no formal authority on the present occasion to represent the Institute, but he had much pleasure in being present. The state of architectural law in Ireland was very unsatisfactory, and was gradually becoming worse. He thought the Alliance might materially assist them in effecting some reformation. He knew that many members of the Institute were anxious to be working with the Alliance as soon as possible, as it was probable that some cases would soon come before the Courts, seriously involving the interests of the profession, and they thought it would be desirable to get some of the delegates of the Alliance to attend, and give evidence as to the usage of the profession in other places. At present they could procure only evidence as to Irish custom.

After some discussion the following resolution was agreed to:—"That the Royal Institute of British Architects be invited to meet the delegates of the Architectural Alliance consisting of the following allied societies (mentioning their names) once a-year at their annual meetings."

The next subject brought under discussion was the custom, law, and expediency of an architect retaining his plans.

The chairman said some members of the profession were of opinion that they had an absolutely legal right to retain their plans; others considered it a right established only by custom; others simply thought it desirable, whilst others thought the retention of the plans a matter of no moment. He invited the members present to state the results of their experience.

Mr. Hine said his experience supported the universal practice of retention.

Mr. Drew cited a case which occurred forty years ago in Ireland, and which was identical with Mr. Barry's case. The architect of the Board of Public Works in Ireland, Mr. Murray, was paid £500 a year and a percentage of five per cent. on all public buildings; he did the work in a public office; his clerks were paid by Government. The Government made a change, and called upon him to confine himself to the duties of the office, with an increased salary; he resigned his office, but refused to give up any drawings he had prepared while holding office, and succeeded in retaining his plans.

Mr. Oliver said that, having succeeded in a competition for the North Riding Infirmary, after carrying out the works, and upon rendering up the building to the corporation, he was asked by the town clerk to deliver up the drawings. He maintained they were his own property. The town clerk said the corporation would go to law. He (Mr. Oliver) said that if they would not make it expensive he would join them in a friendly law-suit for the purpose of settling the principle. The committee, however, dropped the matter, and he retained his drawings.

Mr. Drew said a similar case was that of Mr. Rogers, against whom proceedings were commenced by the Town Council of Cashel because he retains his plans. He consulted counsel, who very strongly advised him not to give up a single paper. It was to be presumed that the Town Council also consulted counsel and received the same advice, for the matter was dropped. He knew of other similar cases.

Mr. Hine said it was his practice to bind up the plans, bills of quantities, contracts, and every paper connected with it into one book, the custody of which had always remained with him as the umpire between builder and client, without dispute by either.

After a lengthened discussion, the following resolution was agreed to unanimously: "That in the experience of the delegates present, the custom of the architect retaining his plans of the building which he has carried out has been universally adhered to, and that it is desirable it should be maintained."

COLONEL LAKE'S OPINION AS TO THE "BRIDGE."

IN answer to a request made to Col. Henry Attwell Lake, C.B., for an expression of his opinion as to Mr. Charles Geoghegan's plan for widening and improving Carlisle Bridge, that gentleman writes:—

"I have carefully inspected the plans and sections prepared by Mr. Geoghegan, and examined the model constructed by him. I then proceeded to examine the present bridge at dead low water, in order to be able to judge how far the proposed alterations could be made without any fear of danger to the structure. It is perfectly evident that the foundation of one of the piers has sunk to the extent of about eight inches; but, judging from the appearance of it, and the very regular and uniform way in which it has settled, as well as the total absence of any apparent damage to the arches, I should say that this settlement must have occurred very soon after the completion of the bridge, and I should not, therefore, anticipate any further sinking after a lapse of, I believe, nearly 100 years. The remaining portions of the bridge appear to me to be in a perfect state of preservation; and, considering the enormous amount of heavy traffic which must have passed over it during the time it has been standing, I have no hesitation in saying that it must have been most admirably built, and is likely to stand for many years. As Mr. Geoghegan's plan for adding to the width of the bridge, and bringing the roadway to the level of Sackville-street, has been under discussion, and must be well known to the public, I need not now dwell on its merits. There can be no doubt, *if economy is to be studied*, that Mr. Geoghegan's project offers greater advantages than any other that has yet been before the public. In an engineering point of view, there appears to me to be no difficulties in the way. It cannot possibly be argued that the proposed alterations would endanger the safety of the foundations; for Mr. Geoghegan, in removing the crown of the arches to bring the roadway to the proper level, does not propose to increase the superincumbent weight, but, on the contrary, to lessen it. With regard to the new portion of the structure, which is to be laid on hollow cylindrical pillars, Mr. Geoghegan is not trusting alone to theory, but has the advantage of having seen them used with most excellent effect in the erection of the new bridge at Ross, so that on this point there can be no difference of opinion. As regards the expense of carrying out the work as proposed by Mr. Geoghegan, and of the length of time it will require to complete it, I do not feel myself competent to speak, as my experience in works of this kind has been wholly confined to India. It has, I understand, been proposed to remove the present Carlisle Bridge, and construct an entirely new one on the same site. There can be no doubt that it is generally more satisfactory to erect a new building than to add to and alter an old one; but, at the same time, there are many things to be considered before undertaking what must, at all events, be a most costly and somewhat tedious work, when a far less expensive and perfectly feasible substitute can be found."

THE POST-OFFICE TELEGRAPHS.

A MEETING of the members of the Chamber of Commerce was held on Wednesday in the Commercial Buildings, Dame-street, for the purpose of taking measures for obtaining at the hands of Government some improvement in the management of the Post Office Telegraph system. W. D. La Touche, Esq., D.L. in the chair. A resolution condemning the manner in which the Post Office Department has conducted the system during the past three or four months was adopted. Resolutions were also passed calling upon the council to take steps in order to obtain redress from Government. The hon. secretary, Mr. Bagot, read a letter from Mr. Baines, General Post Office, Dublin, stating that the department would at once take steps for the better working of the system.

NOTES OF AN ARCHITECTURAL TOUR IN ITALY, IN THE AUTUMN OF 1869.

(Concluded from page 131.)

An excursion to Tivoli to see the beautiful circular temple of the Sybil and the charming scenery, and a few other excursions, left us but little to spare of our prescribed sojourn in Rome of three weeks, and we left it, with many regrets, for Perugia, an interesting old city on the summit of a rock, in the buildings of which the Italian-Gothic influence seems to be striving for the mastery with the classic principles of Rome, and the result sometimes is not unpleasing. A few details from the cathedral, and an open-air pulpit on one of its fronts, we sketched, and enjoyed a rich treat overhauling the treasures of early Italian painting in the picture gallery. From thence to Orvieto, another city "set upon an hill," and a very high one too, requiring to be ascended corkscrew fashion, and surmounted by one of the most wonderful façades to be found in any cathedral in Europe. It may be called Gothic, but displays a union of horizontal and vertical lines, and an absence of the pointed arch, which, according to many received ideas, would be supposed to be the very essential of the style. The sculptures on the marble surface of the front in bas-relief, representing the whole history of the world, by Nicolo Pisano, are very fine, though their position is not to be commended, and they need to be protected in some instances by wire latticing. The mosaics, which give a great air of warmth and life to the front, are modern. The rest of the church seems very different in character from the façade, bearing more relation to the Gothic of Sienna in the striped courses. It is indeed a rich storehouse, from whence we were able only to carry off a few mementoes, and proceeded to Sienna, arriving again in the late dukedom of Tuscany, and observing at once an affinity to the architecture of Florence in that of the large mansions or palaces, which, however, are only a small part of the objects of architectural interest in this city.

The Cathedral of Sienna is very curious, having been begun on a very magnificent plan, and carried on with great elegance and richness of detail, when some trouble having befallen the city it was determined to reduce the extent of the design, making the transepts answer the purposes of nave and choir, thus causing the axis of the church to be placed transverse to the original intention. Sufficient of the original nave was completed, however, to show the design, and left standing, and in the finish of the remainder a vast amount of coloured marble and carving was employed. The amount to which the black banding has been used in the interior is greatly in excess of the original intention, and I think overdone. The pavements are very curious, consisting of inlaid outlines in black and white marble most powerfully and effectively rendered, though, I fear, wasted in such a position.

There are several mediæval palaces and civic buildings here of Gothic character, in which, however, one form of window recurs so often as to be tiresome. The quaint bits of wrought ironwork on some of these attracted my attention, and I sketched some of them; and I find I am not singular in my fancy for these, as several appear amongst the sketches published by the Architectural Publication Society; also in the Italian sketches of Messrs. Waring and Macquoid. Of later buildings one or two deserve special note, as in the same vigorous severe style as the Florentine palaces, built of enormous blocks, boldly chamfered, and with tremendous overhanging cornices. However, soon we reached the head quarters of this style—Florence itself,—where we settled down for a week, feeling assured its treasures could even but hastily be scanned in that time.

Florence is circumstanced very like Dublin, being divided into two nearly equal parts by the Arno, with broad quays and several bridges, among which the beautiful three-arched bridge of the Trinity stands pre-eminent. At the western end the agreeable promenade and park of the Cascine, and at the south the Boboli Gardens attached to the huge Pitti Palace, now the residence of the King of Italy. This palace contains a splendid collection of paintings, and is connected by a covered passage and bridge with the gallery of the Uffizi at the north side of the river, containing also a superb collection and some choice works of sculpture, including the celebrated Venus de Medici and other celebrated works of the antique period. The two together form the second largest collection in Europe, that at Madrid only being more extensive, and the various schools are well represented. The quays seem to be undergoing a process of excavation, to form under them two large intercepting sewers, and suggest what is so desirable to be done in Dublin for the purification of the Liffey.

The older architecture of Florence is very fine—quite distinct from that of Pisa,—and gives many beautiful specimens of Italian Gothic. The church of San. Miniato, on a hill near the city, dating from the eleventh century, is one of the most perfect specimens of the basilican type of church, in a round-arched Romanesque style of peculiar appropriateness and beauty. Of Gothic churches, the celebrated Or San Michele—a secular building converted to ecclesiastical uses—is one of the richest; and the elaborate traceried windows, so different from the Northern Gothic, and yet bearing a family relation to it, are deserving of high praise. The Duomo may be considered as one of the most extensive and perfect pieces of Italian Gothic in existence, but its style is peculiar to itself, and like nothing to be seen in any other city. The exterior is covered with black and white marble, not used as at Sienna in alternate horizontal bands, but in panels. The details of doors and windows are some of the finest Gothic specimens in any variety of the style, and the celebrated campanile of Giotto is beyond all praise. The gigantic dome of Brunelleschi is doubtless much at variance with what was contemplated by the original architect, and this part of the church in consequence seems to belong neither to the Gothic nor classic style, being in fact an experiment on a large scale, undertaken during the period of transition. The western façade of this great church stands bare and hideous, as do also several of the others in the same city, awaiting the casing of marble which they were intended to receive; and the same is to be noticed also in the façades of the great churches at Bologna and Ferrara. The interior contains some good detail, but is bare, gloomy, and unfinished looking. The baptistery, with its celebrated doors—the work of Lorenzo Ghiberti,—stands at the western end—another architectural wonder. The church of Sta. Croce is one of the finest in its proportions and spaciousness I have ever seen; but with the exception of the monument with which it is filled, including those of Michael Angelo and other master minds of Italy, it is bare and devoid of decorations compared with the generality of Italian churches. It has had a new white and black marble façade recently added, which, however, has nothing to say to the flanks which still stand bare and unadorned. There are several other very large churches in Florence of all periods, and attached to one is the Medicean Chapel, one of those sumptuous mortuaries the Italian nobles seem always to have considered essential to the sepulture of their ancestors. It is much more spacious than the similar chapels in Rome, and is lined with colored marbles, in which so much black, grey, and other sombre colours predominate as to produce a gloomy and unsatisfactory effect. The two great sculptural monuments to Lorenzo and Guiliano de Medici in the adjoining chapel are amongst the most noted works of Michael Angelo, and are well illustrated by the casts from them at the Crystal Palace.

The mediæval civil architecture of Florence is interesting, including the grand Palazzo Vecchio, with its frowning machicolations, and two or three others. A fortress or prison-like air pervades these buildings, which continued to attach to the subsequent buildings of the classic revival. The Loggia dei Lanzi of Orcagna is a noble piece of arcading, and was so much admired by Michael Angelo, though in a different style to what prevailed in his day, that he recommended it to be continued all round the piazza without any alteration of the design; a proof that at least one great master of the classic revival was not insensible to the excellence of the work of those who went before him. There is a good deal of Gothic spirit, however, infused into the Renaissance architecture of the later buildings of Florence, as seen in the prevalence of the Gothic or Pointed arch over the semicircular, and the mullioned windows with circles in the heads, so common in the palaces of the Renaissance period. These are very fine, conveying the idea of massiveness and impregnable strength beyond any others. The Strozzi and Riccardi are amongst the finest specimens, and we have nothing like them in our country, if I except the front of Newgate, which gives a faint idea of them; the vast Palazzo Pitti, however, beats them all. In contemplating it one cannot but feel that "there were giants on the earth" in the days when it was built. The huge rocks piled one over the other, Pelion on Ossa, forming the basements of the wings, are beyond all description, and should be seen to be appreciated. The same Titanic or Cyclopean system of masonry pervades the whole of it, but it is damaged greatly in effect by a petty balustrade formed of little Ionic columns on the level of first floor and above. This is evidently the work of some later bungler, as the original architect, in all likelihood, would have crowned such a mass with a cornice like that of the Riccardi or Strozzi, or possibly more tremendous in its proportions than either of these. There are many smaller palaces, to some of which an open upper storey is added, producing a very pleasing effect.

From Florence to Bologna, a city though famous rather over-rated by the guide books. Its situation is flat, and the plan exceedingly perplexing, like that of Milan, from want of a base line. It boasts two leaning towers as against the one at Pisa, but not of such architectural character. The streets are almost invariably built on the piazza fashion,—an arrangement we found the benefit of, as it rained almost incessantly during the whole of our stay. The principal church—S. Petronio—is of enormous dimensions, and has some skilful treatment in the immense range of side chapels, each large enough for the transept of any ordinary church. The base, doorways, and the small portion of the façade completed exhibit some very fine detail, but the work appears to have been soon interrupted, and the occurrence of the classic revival before its completion gave occasion for a competition for a classic façade, which it is well never went any further. The designs then submitted, in which even such great names as Palladio and Vignola engaged, are still to be seen, and do not give a high idea of the " get-up " of competition drawings in those days. There are some good pieces of civil Gothic, and several other huge churches, possessing no great claims to notice, but containing some interesting monuments, amongst which the shrine illustrated is the finest. The picture gallery contains some splendid works of the Bolognese and other Italian schools.

Bologna to Ferrara, amid drenching rain, which did not add much to our enjoyment of that desolate-looking city, which, it is said, lies under a ban since Tasso or Ariosto, I forget which, was imprisoned there. Its huge moated castle is an interesting specimen of the fortresses of mediæval Italy, and the cathedral façade is very curious ; but we did not find much else to interest, but pressed on to Venice.

Charles Dickens, in his Italian notes, having described his other travels through the cities of Italy in proper narrative form, finds this style much too prosy and matter-of-fact for Venice, and accordingly records his impressions of it under the similitude of a dream. And certainly, no matter how well prepared by previous study, the traveller can never alight for the first time on " The Stones of Venice," without feeling that he is entering on something totally different from anything he can have hitherto seen or even imagined. I had read a vast deal about Venice, from Shakspeare to Ruskin, studied its map, and its buildings by the help of drawings and photographs, and often dreamt about it into the bargain, but nevertheless the reality transcended all expectations, and made me feel amid all the rich and rare delights to be experienced by a traveller in Italy, a visit to this city yields the highest. Whether Ruskin be correct or not in his idea that the Piazzetta of St. Mark is the central point of the earth's surface, as he somewhere expresses it, it is truly a spot unsurpassed, if not unequalled, in interest by any other.

The railway does away with much of the inconvenience of reaching Venice, without detracting from the new and strange feelings one experiences on arriving. We step at once into an " omnibus gondola,"—an intermixture of the practical and historic which I suppose has arisen since the railway was opened,—and are conducted along the Grand Canal to our hotel near the great square of St. Mark, and soon get accustomed to the ways of the place. It does not take long to find out that to get from one place to another on foot is possible, but involves an amount of intricate exploration through the narrow mazy streets, beyond any labyrinth that has ever been constructed specially to puzzle the explorer ; but the cheapness and swiftness of the aquatic mode of locomotion are highly to be commended, and the freedom from exertion on the part of the traveller, while contemplating the architecture of the city, no less than the excellence of the latter, render it delightful in comparison with the fatigue one has so often to undergo on similar excursions in other cities.

The Piazzetta of St. Mark contains certainly such an assemblage of architectural glories as few cities can boast, and the views in every direction to the various islands near and more distant, each carrying separate architectural groups rising out of the water, and well relieved against the level horizon, are such as are nowhere else to be found. The venerable church of St. Mark itself is in my view to be looked on quite as an importation or exotic, far more even than the Cathedral of Milan, and is one of the earliest instances to be met with of the wholesale importation of a foreign style, in preference to what was indigenous. It bears little affinity to the Venetian Gothic, and seems to have arisen from the fancy of the leaders of the ancient republic to commemorate their conquests in the east by the erection of their great church in the style prevalent there, Its plan is accordingly a Greek cross and much of the constructive arrangements are borrowed from the church or mosque of St. Sophia at Constantinople, with a flavour of later Moslem architecture in the domes and minarets. The interior is gloomy, but of course venerable looking, and the numerous trophies plundered from the east, including the bones of St. Mark himself, make it more an architectural and ecclesiological museum, than a noble church. Amongst all this there is of course a great deal of interesting and excellent detail, bits here and there, rather than any complete or grand feature, but nothing to create in my mind the raptures into which some modern critics have been thrown.

The Ducal Palace is more interesting in my view, as it exhibits the local style in perfection, and its two façades to the Piazzetta and sea, are not only noble in themselves but characteristic of the place and period. The two arcades, especially that on the first floor, are very fine, but the vast mass of wallspace overhead looks too heavy for them, and the concealment of the roof and hideous battlements are great defects. The upper windows evidently had tracery in them at one time, but it has been destroyed, and the detail of the two lower storeys is well deserving of study. It must not be supposed, however, that it will bear to be criticised in the same unmerciful manner that Renaissance architecture has been by a popular writer. For instance, it is open to the complaint of repetition so often urged against the latter ; and as for soundness of construction, it is very questionable whether it would ever hold together, but for all the iron ties and braces which run through it. The weakness of the angle piers is apparent to every eye, and as real as it is apparent. The balustrades exemplify a piece of downright shamming, as they are made to imitate little arcades, whereas there is no principle of the arch whatever in their construction. This reprehensible feature has, however, oftener been imitated than almost any other piece of Venetian Gothic, as we may see in several instances in Dublin ; but to get a really excellent balustrade of the same period we have only to look around at some of the other palaces, and we find it, the balustrades and top rail being really treated in accordance with their constructive elements, without any shamming. The interior court of this vast pile, and the flank towards the celebrated " Bridge of Sighs," though of Renaissance work are no way less interesting than the outer façades, and are wonderfully scenic in their effects. There is some fine detail in the interior staircases, chimneypieces, &c., of the early Renaissance period.

Boldly, and as some would say shamelessly, challenging comparison with this venerable pile stands the Library of St. Mark, on the opposite side of the Piazzetta ; and despite the attacks of Mr. Ruskin and his disciples, it is likely to hold its own in the admiration of the world for many a long day. Mr. Fergusson, a critic of a broader school, says, that if we could only forget that the architect was dreaming of the Flavian amphitheatre, we might admit that this building possesses high excellence. But why need we forget anything of the sort ? This building, and the other Renaissance palaces of Venice, shew conclusively that Sansovino and the other great masters of the classic revival could not merely study and understand the great works of antiquity, but that they were capable of developing and applying the principles of classic architecture, so as to reach stages of excellence and suitability to modern uses, which mere slavish imitation could never accomplish. It would be well for the Gothic revivalists of the present day if they could shew an equal advance on the work of the mediæval architects whom they propose to imitate, but from whose points of excellence they can make no advance. The Flavian amphitheatre was a noble model, but here the model is left far behind. Whether viewed as regards its constructive or decorative features, it is a splendid architectural triumph which shallow critics may carp at in vain. For instance, it is said all the features which give so much attraction—the columns and entablatures—might be sliced off the façades, and the buildings still remain. Well, and what then ? All the leaves and branches may be lopped off a noble tree, also all the covering which we are told is the glory of a beautiful woman's head may be shorn or shaved off, but it is no detraction from the beauty of the object, that it may be thus marred. These two buildings are types of a vast number of others in Venice—the mediæval and Renaissance palaces,—and it is not too much to say that, while the former are chiefly interesting for occasional bits of detail, such as arcaded windows, wall panels, &c., the latter are remarkable as fresh and original applications of classic architecture to modern uses, perfectly distinct from the classic schools of other cities such as Rome and Florence, and in their sumptuous character fully expressing the wealth and refined tastes of the magnates of the republic during its most palmy days. It is only of late years amongst ourselves that feeble imitations of them have been attempted in our banks, clubs, and other buildings where wealth and luxury find expression in architecture, and few nobler or more suitable types could be found.

The churches of Venice may also be divided into two classes, the Gothic generally of red brick, of very noble proportions, and with occasional good detail, of which the church of the Frari is the best example ; and the Renaissance, which are distinguished, like the palaces, by extraordinary richness, carried often indeed, as in the church of the Scalchi and that of the Jesuits, to extremes. The campaniles of Venice are studies nearly all of them, and often, though begun in the

Gothic or Romanesque style, and finished in the Renaissance, like the great tower of St. Mark, display the soundest general principles in their design, and are unsurpassed in picturesque effect by those of any other city.

I must hurry on, however, or these few rough notes will extend to unreasonable length. The treasures of painting in this grand old city are celebrated all the world over. Wealth, richness, and magnificence are the pervading characteristics of everything remaining of old Venice; in the forms, complexion, and tresses of the fair dames whose beauty shines on the canvas of Titian, Giorgione, Paul Veronese, Palma Vecchio, and others, in the costumes, colouring, jewellery, and sculpture; and, as a natural result, the richest and most magnificent specimens of Renaissance architecture are to be found there; nor does it seem that the wealth of the ancient city could have been better bestowed. The many buildings erected for charitable purposes deserve notice, and especially the Scuole, which are quite as magnificent as the palaces. That of San Rocco especially is a noble piece of Renaissance architecture, treated with great freedom and adaptability to its uses, and containing a vast assemblage of art treasures.

From Venice we proceeded to Padua, the churches of which exhibit some fine specimens of both Italian Gothic and Renaissance work, and in which the example of Venice seems to have been followed in attempting features of Saracenic architecture in the domes and minarets added to the churches. The celebrated frescoes of Giotto in the chapel of the Arena, and the huge Gothic Hall called Palazzo della Ragione were duly explored and admired by us, and we then pushed on determined not to pass Vicenza without a glimpse of some of the doings of the great apostle and legislator of the classic revival, Andrea Palladio, whose works having for two or three centuries formed an architectural grammar for the civilised world, are now decried as exclusive, narrow, incapable of progress or advance, and what not. One thing is, however, perfectly clear, namely, that Palladio and his coadjutors did engraft many new ideas on the architecture of ancient Rome, and did apply and continue its various elements so as to produce results not only grand and noble as pieces of proportion and decoration but admirably adapted to the requirements of the age they lived in, and can this be said of the ultra Gothicists of the present day? I trow not. They seem to do little else than exactly reproduce the architecture of four or five centuries ago. It was certainly a misfortune that many of Palladio's works in this city are executed only in stucco, but so were the houses of Pompeii, and the merits of the designs are not one whit the less, because peculiar circumstances prevented their execution in a nobler material, The model in clay of a noble piece of sculpture exhibits the master's hand often even better than the finished work in marble, and the same may be said of cartoons and sketches as compared with finished paintings. This city is full of Palladio's designs—in fact little else is to be seen in it, except the two columns indicating its affinity to Venice, and the name of the great architect seems quite a household word in it. His buildings, however, are sadly neglected, and often turned to inferior uses from what they were designed to serve, but nevertheless display many noble and original features.

Vicenza to Verona, which more even than Brescia deserves the appellation of "l'armata," as it bristles with fortifications and military display on every side. Fortified at enormous cost by the Austrians as a stronghold against Italy, it now occupies the more suitable position of a stronghold of Italy against Austria. Its beautiful campaniles and interesting churches present the Italian Gothic style in great force, brick and marble being the materials generally used. The church of San Zenone is one of the most complete specimens of the basilican plan and arrangement to be seen anywhere. Sta. Anastasia and several others also furnish rich treats, and the tombs of the Scaligers and huge Roman amphitheatre are objects of deep interest. Our tour in Italy ended here, and with the feeling that never had any equal period of our lives yielded us more rich delights, we bade farewell to its classic ground, and availing ourselves of the first railway that has crossed the Alpine barriers of Northern Italy, we came on by the Brenner Pass through Bautzen and Inspruck to Munich. Winter had now fully set in, but in our snug and well-warmed carriage we did not feel its influence; but peeping out at different stages at the snow-clad heights of the Tyrol, whose scenery we left ourselves as yet to imagine rather than explore, we arrived at the Bavarian capital, determined to devote a few days to its art-treasures. It is certainly a pleasant place, with wide and spacious streets and squares, and a vast number of new buildings, some of which, especially the works of Klenze, are good specimens of the modern German classic revival, though rather too much of the mere imitative element pervades them. The new streets and buildings take up so much attention generally that the older architecture of the place is apt to be overlooked; but there are several fine mediæval churches, in particular the Frauen kirche, which is very noble in its proportions, and contains some good later German Gothic detail. A modern Gothic church has been built, of about the same class of art as the Elizabethan kirche at Bâle already adverted to, giving, however, great room for display of the modern local school of stained glass. The ancient town-hall and gate-house are interesting, and a really clever piece of modern Gothic is in progress beside them. From these we pass to the improvements carried out by the late King Ludwig. Some of these are direct imitations of Italian works, as the Konigsbau, or royal palace, which feebly imitates the Pitti at Florence; a loggia also exactly reproduced from the Loggia dei Lanzi in the same city. The Ruhmeshalle, an equally slavish Greek copy, varied however in its general plan from the Greek temple model, which is, however, reproduced to perfection in the Walhalla near Ratisbon by the same architect. One of his best works, which, though classic in style, is still eclectic in character, is the old Pinacothek or picture gallery, a very noble work, and filled with a magnificent collection of nearly every school in Europe. Other popular and favorite architects were Gärtner and Ziebland, also Veit, who, affecting to regard Klenze as the representation of too formal a school, have simply taken other types for imitation, as in the Ludwigs kirche and Basilica; or else, as Veit has done in the New Pinacothek, disregarded the principles of any recognized style, and produced a building having neither style, convenience, or beauty to boast of. The exterior of this is painted in fresco, on a large scale, chiefly by Kaulbach, and one of these pictures represents or typifies the downfall of formalism through the valiant efforts of Veit, Overbeck, and others of the same period. Could formalism produce anything more formal, and ugly into the bargain, than the building on which these frescoes are displayed? an instance of the severity of criticism which those whose own doings are most open to it apply to the doings of others. However, it contains a fine collection of modern pictures, and we pass next to inspect some of the results in sculpture achieved through the liberal patronage of art exercised by the late king. These, I think, are the most marked and permanent of any, the genius of Schwanthaler having been thus called into activity; and a visit to the museum, where casts of his works are treasured up, gives one the idea that our sculptors are mere pigmies in comparison with such as he. Groups ranging from cabinet to colossal size, and several grand subjects for tympana, attest his thorough mastery of his art, and show what it is capable of. Many of these, as the colossal figure of Bavaria in front of the Ruhmeshalle, have been finished as bronze castings; and a visit to the royal bronze foundry was most interesting, as it shows that the Munich school of sculpture and bronze casting has attained a world-wide reputation, and brought some adequate return for the expenditure which its establishment must have required.

We could have spent more time to advantage in this pleasant little capital; but my term of release from home duties having expired, I was here obliged to turn my steps homeward, viâ Strasburg and Paris, my friend pursuing his journey to Vienna, Dresden, and Berlin. Human nature is limited in all its powers, and mine for the digestion and assimilation of so much intellectual food were well nigh exhausted, as I fear your patience must now be with this paper, which, from the number of places to be noted, has, I fear, been spun out to unexpected length.

CORRESPONDENCE.

[*It is to be distinctly understood that although we give place to letters of correspondents, we do not subscribe* editorially *to the opinions or statements set forth in same.*]

CARLISLE BRIDGE.

TO THE EDITOR OF THE IRISH BUILDER.

Sir,—Without wishing to interfere unduly with Messrs. Page and Turner's position, as the holders of the first premium, or to question the excellence of their design further than the material it is designed for, I would observe that in a *bonâ fide* competition it does not follow that the design entitled to the premium is the best of those submitted, or the one best adapted for the site, or that it should necessarily be adopted for execution. This point has been very clearly set forth in the construction of the German competition code, the principles of which are, I believe, recognised by the profession in England:—"Without going into the question at length, we must declare that the interests of art and the interest of individual competitors must be kept strictly apart. . . . . . If it is argued that the designs which have been held ineligible as regards the premiums should also be excluded from the exhibition (preliminary exhibition to the public) because they may perhaps, by the manner of their getting up, mislead the public, one is apt to overlook the equally possible case of a competitor having improved on the instructions which may have been faulty to a degree; and then such an exclusion would actually commit to oblivion the very best design of the whole set. On the other hand, the examination of such a design may lead to its ultimate execution, although in the competition it was not entitled to a premium. Such an eventuality is, of course, impossible under the Hamburg programme of 1864, which requires that the premiated design and no other must, under all circumstances, be the one to be carried into execution, and the case we have quoted above tends to show that to insist upon such a clause would be to take up an untenable position."

As the reasons against recommending "the construction of a solid pier of masonry in the centre of the waterway" may not be so "obvious" to your readers as they seem to be to Mr. Page, perhaps he will be good enough to state the "engineering" reasons against building a pier in the centre of *this particular waterway;* and the "æsthetic" reasons against a central pier being built in any waterway. And further, as he is "prepared to design and execute" a stone bridge, it would be interesting to know if engineering and æsthetic considerations would lead him to adopt one span or three;—to spring an arch from about low-water level, as would be necessary in the one case, if a level roadway is to be provided; or, as in the other, to perpetuate and extend *two* solid piers of masonry as obstructions to the waterway;—in preference to constructing *one* pier, in the centre; which, if there was traffic on the river, would properly divide it into "up" and "down," and at the same time naturally tend to the formation of two serviceable channels, instead of one, as at present.

Mr. Page may not have examined for himself the circumstances of the river, and may not be aware that they are such as to have led a resident in Dublin, upwards of four years ago, and again a few days since, to suggest through one of your contemporaries, "the propriety of stopping the water at Carlisle Bridge by means of piles, having sluice-gates affixed to same, which could be raised or lowered at the flow and ebb of the tide. By this means a sufficient supply of water could at all times be kept above the bridge, which would not be stagnant, as there would always be an undercurrent on the gates being raised. The stench, by this simple, inexpensive, and temporary plan, would be effectually kept down till some permanent means be fixed upon for the safety of the public health." Such a suggestion, to say the least, does not imply the existence of a traffic on the river, or of a current or tide, which a central pier would be likely to interfere with.

Wm. Henry Lynn,
Lanyon, Lynn, and Lanyon.

Belfast, June 25.

P.S.—From reading Mr. Page's letter in the *Irish Times* of yesterday, I am the more inclined to think that he has never seen the river he suggests such difficulty in dealing with,—as to its floods, currents, &c. It is not recorded that the builders of the present bridge, who had *two* water piers to construct, found any difficulty about their cofferdams obstructing the river, &c. Is Mr. Page under the impression that the same conditions of current and foundation are to be found in the Liffey as in the Thames? or does he mean to imply that a properly-constructed stone bridge is less durable than an iron one? Surely he could have added to his list examples of stone bridges in good preservation, which were built long before cast-iron ones were thought of. As far as beauty is concerned, the exploits in "æsthetic" engineering performed on the Thames do not convey the most favourable impression of the compatability of cast iron with that elegance of construction and architectural character, which a bridge such as this should possess.

Mr. Page refers to the design "In Memoriam" as having been "rejected." It was not rejected in the sense he seems to imply; it was merely held to be ineligible as regarded the premiums. If it had been rejected on its merits, there could be no reason for drawing attention to it in the referees' report.

W. H. Lynn.

June 28th, 1870.

ANOTHER DESIGN FOR CARLISLE BRIDGE.

TO THE EDITOR OF THE IRISH BUILDER AND ENGINEERING RECORD.

Sir,—The lull and general apathy now evinced seem strangely at variance with the zeal heretofore displayed by the supporters of the "City Sewage," "Carlisle Bridge Improvements," and "Dublin Suburban Tramway" projects. This may arise from the difficulties in raising the funds necessary to carry out such large undertakings; or from the want of time, energy, and push required to devote to them. But whatever the cause, nothing practical has been done, and matters still remain in the same old way. Foremost of all pressing necessities, and calling for immediate action in the cause of suffering humanity, is the abatement of the horrid effluvia from the bed of the River Liffey at low water, and which I have no doubt could be temporarily effected by our fellow-citizen, Dr. Cameron, by some chemical process, at a small outlay, if so instructed; or by the removal in sections of the accumulated deposit in the river, by steam or spoon dredging, and the stuff removed by barges to remote districts, or discharged into deep water. This operation could be performed without offensive smells, by forming on the upper sides of the bridges, *dams*, with simple hand sluice-gates inserted, both to retain and regulate the height of the water, and discharge the back and sewage waters when found necessary. This process could be continued in sections for the entire length of the river, and, when completed, maintained at a cheap rate by the erection of self-acting sluices, as proposed by Mr. Corbet's plan, or by other appliances, until the completion of the *permanent* sewage project.

The construction of "permanent intercepting sewers, syphons, and conduits" for receiving and carrying the sewage matter to the Bull, Baldoyle, Rush estuary, or elsewhere, at an estimated cost of £250,000, and their after costly maintenance, seems to be a matter beyond the powers of the Corporation, who declare they have "no funds" for such an object. Government therefore, on public grounds, should be respectfully solicited, either to perform this work themselves, or to advance, at a low rate of interest, the money required to carry out this desirable "*sanitary work*," as well as the Carlisle Bridge improvements, upon the securities of Port and Docks dues, or other securities to be named and offered by the Corporation.

As no definite plan seems to be adopted for the improvement of the bridge and its approaches, and as *suggestions have been generally invited*, I beg leave to forward a sketch taken from *full plans* prepared by me some months since, but which I forbore sending to the Corporation at the time, hearing that Messrs. Lanyon, Lynn, and Lanyon's *admirable design* for a two-arch stone bridge had been approved of. I therefore beg leave to offer, for whatever they are worth, my notions of what I *then* and *now* believe should satisfy all reasonable requirements.

"The obstruction and danger to passengers" arise from the narrowness of the bridge and the cross quay traffic at its north and south ends. This I propose to remedy by the *construction of subways*,—that on the north side to be used for passenger traffic exclusively; the one on the south for coal and general traffic. These subways, assisted by the proposed tramways on top, would effectually relieve, and regulate, the traffic of this locality. As the subways would be sufficiently *fenced, lighted, ventilated, and perfectly dry, at all times*, no reasonable objection could be raised to their use by the public.

As the present bridge is, I believe, a sound and substantial structure, and its approaches easy, I cannot see the object of disturbing it. What we want is, *width and safety*. An addition of 50 feet in width, constructed on the eastern side of present bridge, would, with the subways, be sufficient for all present requirements, and 50 feet more added at a future date, would leave the bridge the entire width of Sackville-street. Further, if the centre portion (the present bridge) should at any future time shew signs of decay, it could be removed, and completed in accordance with the wing additions proposed, and without obstruction to the public traffic.

The objections urged to a single span, as interfering with the width of waterway, and the injury to the iron by corrosion from partial and complete submersion in brackish or impure water, would certainly hold good in a cast-iron structure, in which case, to get sufficient strength and area, the girders should be sprung *below* the level of "high water," and the span narrowed. In the case of a series of "combined wrought-iron and steel girders (which I propose), *sufficient sectional areas* may be obtained, keeping the girders at same time well clear of high water, and leaving unobstructed the present waterway, and improving the approaches on top, the roadway of which would be formed of rolled iron girders, resting upon the main girders, filled in with buckle plates, upon which the sand, flagging, and paving would be carried, as well as the proposed tramways on east and west sides of bridge additions.

As in all probability a Government engineer's sanction must (and certainly *ought* to) be obtained before opening the new bridge for public traffic, who will require to prove the sufficiency of the structure, *if a cast-iron bridge be built*, with a test of *six times the greatest load that can be brought upon the bridge, added to three times the dead weight* (or weight of the structure and roadway), it will be seen how difficult the problem of sufficiency will be of solution; but in the combined wrought-iron and steel girder, lightness of material, combined with sufficiency and economy in construction, are at once obtained, wrought iron being three times the strength of cast, and approved *steel twice* the strength of wrought-iron *in compression and tension.* I estimate the cost of the proposed *eastern addition* at £14,000, giving a roadway 100 feet in clear; or of the two side additions complete, giving a roadway 150 feet in clear, at £25,000. The whole could be easily completed in twenty months, without any obstruction whatever to the public *traffic*.

Respecting the general adoption of tramways through the streets and other populous districts, I will merely observe for the present that I do not think any combination of railway and street traffic desirable, where, in the case of railways, the rails must be of a heavy description to carry the rolling stock, with wide opens on top and deep grooves. The tramplates for street traffic require to be light for shallow flanges, and with narrow opes, so as not to cause injury to light vehicles by the tires getting into the wide rail grooves. It is therefore obvious that the two systems must be distinct. Tramways, when constructed upon the level or nearly so, can be worked cheaply; but when stiff inclines, say 1 in 40, occur, they have little or no advantage over the omnibus on paved or macadamized roads.

Apologizing for the length of this notice of the foregoing projects, which, if it have no other effect, will, I hope, arouse the energetic and thoughtful, not only in Dublin, but in Belfast and other large towns, to the necessity of improving their bridges and purifying their rivers, for the benefit of trade and the health of the inhabitants, I am your's,

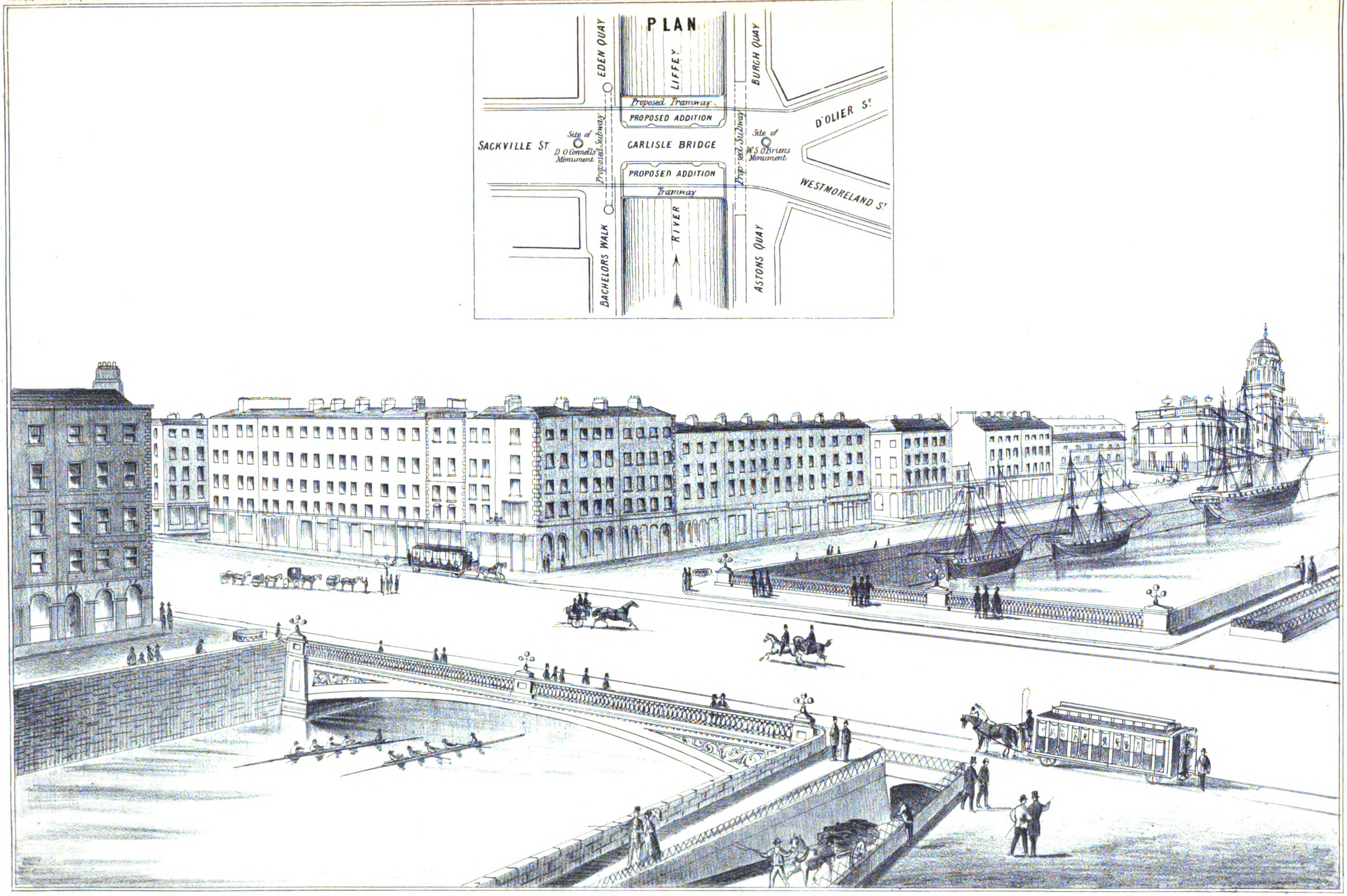
Wm. Lewis.

43, Dame-street, Dublin.

NOTES OF WORKS.

Mr. James Henry, Belfast, has been declared contractor for new meeting-house to be erected at Carlisle Circus, Belfast, for the Rev. H. Hanna. Mr. Anthony T. Jackson, architect.

The new College of St. John, Waterford, is approaching towards completion. Mr. G. Goldie is the architect, and Mr. B. M'Mullen, of Cork, the builder.



DESIGN FOR WIDENING CARLISLE BRIDGE

AND PROVIDING SAFE ACCOMMODATION FOR CROSS TRAFFIC.

BY WILLIAM LEWIS C.E. M.I.C.E.

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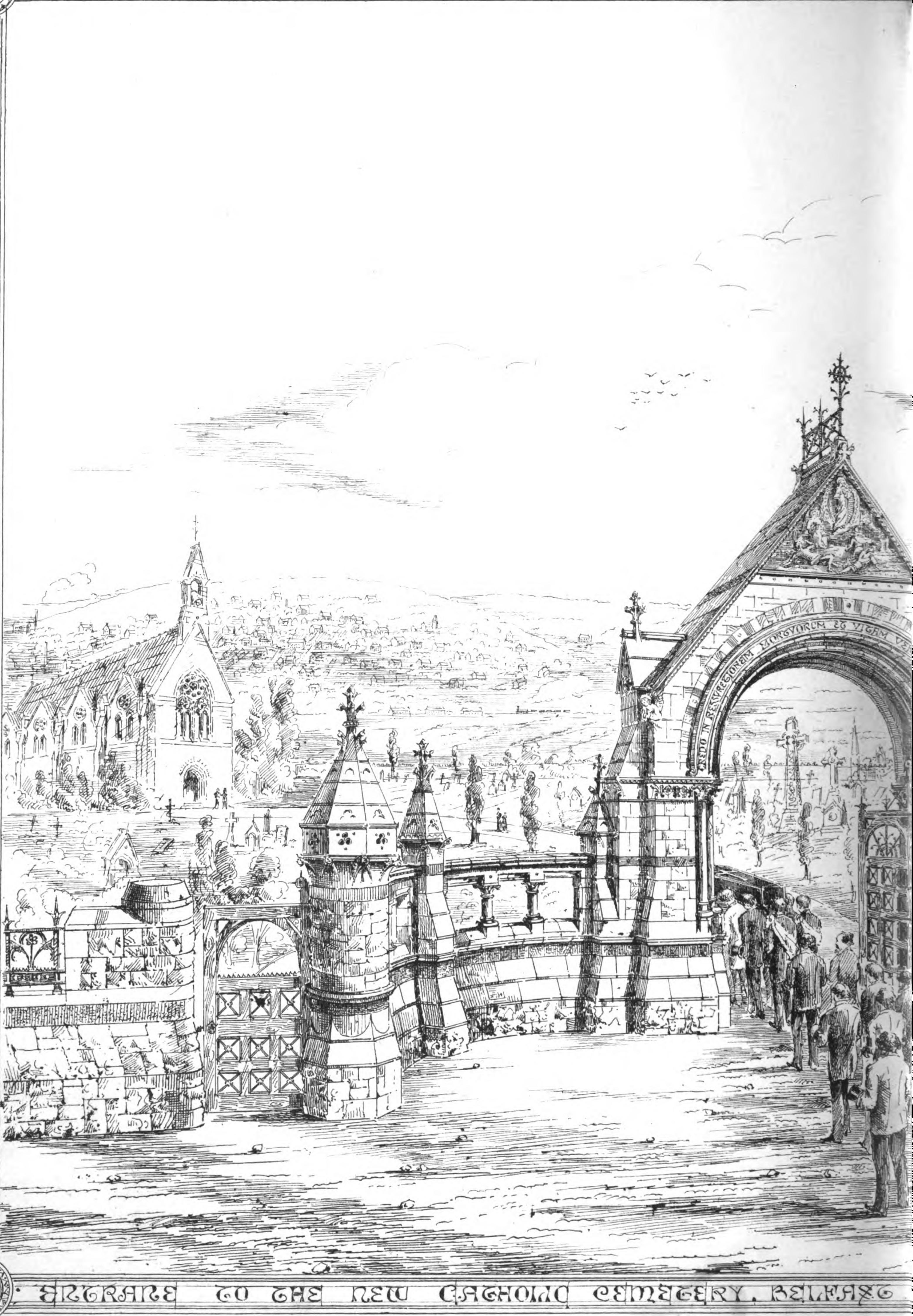
The Irish Builder.

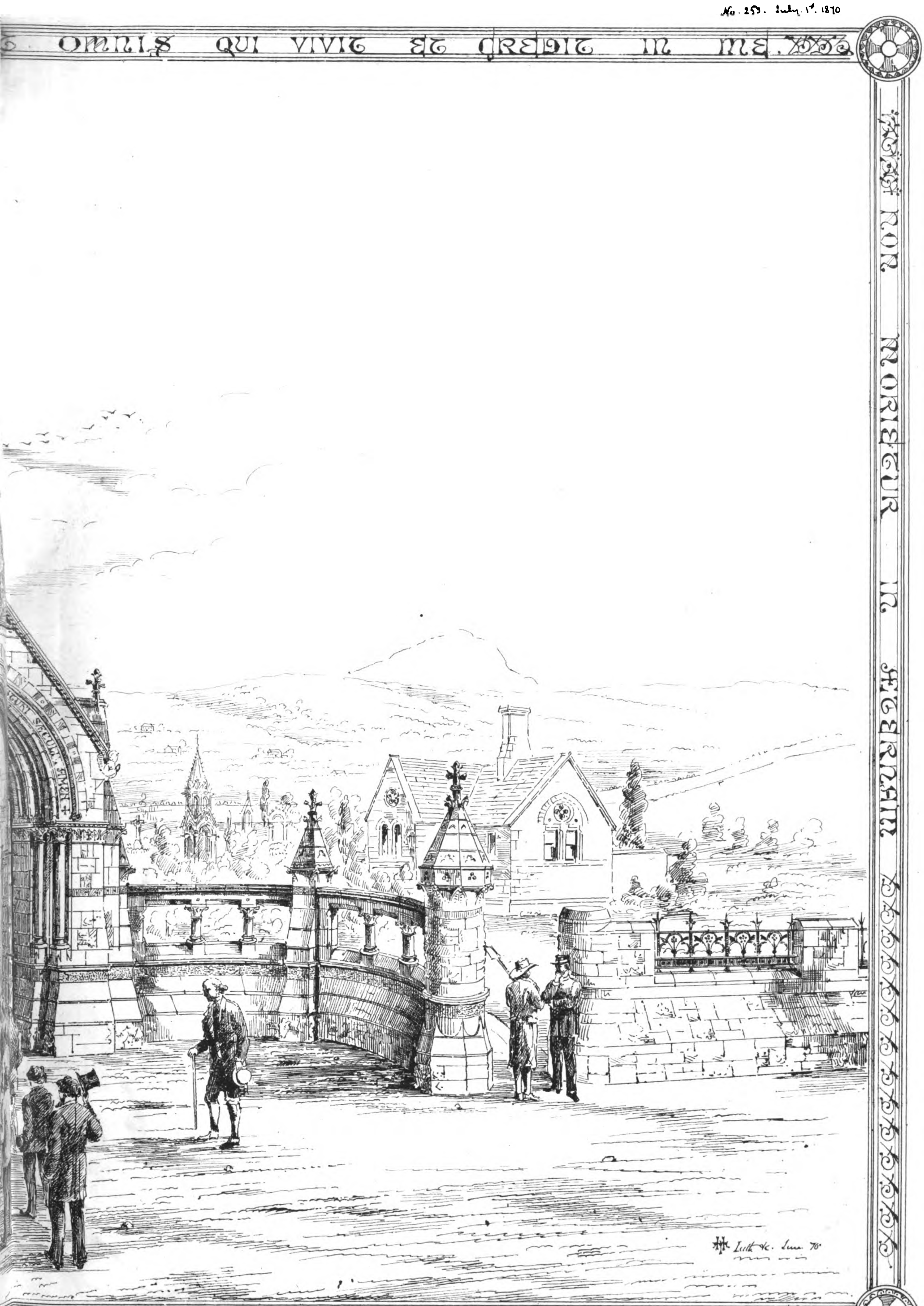
✠ EGO SUM RESURRECTIO ET VITA ✠ QUI CREDIT IN ME

ETIAMSI MORTUUS FUERIT VIVET


CREDO IN RESURRECTIONEM MORTUORUM ET VITAM V

ENTRANCE TO THE NEW CATHOLIC CEMETERY, BELFAST

No. 253. July 1st 1870


OMNIS QUI VIVIT ET CREDIT IN ME
NON MORIETUR IN AETERNUM
for the MOST REV.D DR. DORRIAN, Lord Bishop of DOWN & CONNOR
Lith &c. June 70

J. Hevey, ~~Architect~~
Belfast. June 1870

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A VISIT TO THE SCOTCH NEWHAVEN.

THE London *Builder* recently furnished some particulars retrospective and prospective of the condition of Newhaven in Sussex, but there is another Newhaven, not less known from the habits and manners of its population, of which we intend to say a little. This is the Scotch Newhaven: a straggling seaport in Edinburghshire, near Leith. There are, no doubt, many of our readers who have heard of these famous Amazons, yclept "The Fishwives of Newhaven," whose powers of eloquence is unequalled even by the vocabulary of the Billingsgate of the Thames. Talk not of the Biddy Moriartys of Dublin's Pill Lane, or of Glasgow's Saltmarket, or the Halle Centrales of Paris, the fishwives of Fisherow and Newhaven can beat them (to use a Yankeeism) to eternal smash. Nevertheless, the women of Newhaven are industrious and clean about their dress, though their homes form, in most particulars, an unfavorable comparison with their persons.

Newhaven is an irregular-shaped fishing town, situated on the Forth, about 2½ miles below Edinburgh. It can boast of a little national importance; James IV. of Scotland intended that Newhaven should become an important place, for he conferred upon it certain privileges, and had it in his mind's-eye to have a dock constructed there, and to encourage the shipping interest. But as time grew apace Leith stole a march, which she ever afterwards held, notwithstanding the jealousy of the citizens of Edinburgh, for they look with alarm upon the growth both of Newhaven and the now prosperous and wealthy port of Leith. The purchase of the Charter of Musselburgh, in the 16th century, from James V., by the Town Council of Edinburgh, with all its appurtenances and rights, failed eventually to keep Leith in the shade, although it worked the destruction of Newhaven. How such a mistaken and ruinous policy was silently submitted to even at a later date we are at a loss to know, for the situation of Newhaven offered greater facilities for the establishment of a good harbour accommodation than Leith; but as the latter has now grown into a small city, surrounded by immense warehouses and harbour stores, it would require an amount of labour and outlay that will never be expended to change the site of Leith Harbour and make a Leith of Newhaven. Leith has been certainly improved in harbour management and arrangement very much during these last twenty years; her docks are pretty good, but her river harbour at low water is a dead dog ditch of nastiness and filth. It has ever been this, and, notwithstanding some improvements, it is still a sink and an intolerable nuisance at low water.

While speaking of Newhaven, a few words about Leith will not be amiss, and these few words will be of a sanitary character. The low streets, closes, and wynds winding round the harbour of Leith are on a par with those of Edinburgh and Glasgow, and if anything they are more crooked, darksome, and cut-throat looking. Repulsiveness is in their every feature, and to say they are choking with filth is but to say what every one who ever spent a day in Leith knows.

Leith has a board of health or town council of its own, but what they are doing to improve the town we do not know, but what they could do we might suppose, if it would not be deemed impertinent at this distance. The death-rate of Leith is not low, and we are not surprised, for fever is seldom out of the town. Many of the houses that are inhabited are unfit to live in; and if a stray sunbeam should penetrate some of the low labyrinths of Leith, it would be tantamount to an intimation that there was a change in the planetary system, and the dawn of the millennium had arrived. Perhaps the local boards of the town will bestir themselves, like those further south, and render it unnecessary for us or others nearer hand to remind them of the shortcomings of their extremely prosperous but unnecessarily dirty town.

Newhaven at present is a thriving fishing village, but no more, and we cannot anticipate for it a great growth, hemmed in as it is by Leith and Granton. It has a stone pier stretching to low water, with a return angle, on which is situated a light. This pier was used at one time by the ferries plying between Mid Lothian and the Fife coast, but the erection of the new pier at Granton in communication with Burntisland, a quarter of a century since, has rendered it useless for that purpose. It is now wholly occupied or availed of by the fishermen, and in it daily may be seen numerous small craft engaged in unloading takes of fish and oysters, and other shell mollusca. Perhaps we shall not be far wrong in saying that above 200 boats are at present employed in this useful service. The pier, we may here remark, is by far too small for the fishing trade; and if it was extended, a greater craft of fishing boats would be employed.

Further on towards a place called Trinity another pier stands,—a small edition of the Brighton Chain Pier. It is said to be 500 ft. long, and it is about 4 ft. wide. It extends to a depth of about 5 ft. at low water. This pier, though it originally promised to help the trade of Newhaven, failed in doing so. It is not much used; Granton Pier superseded its general use.

Newhaven, we said, was irregular; its main thoroughfare is called Main-street, but it shows also a one-sided street or quay extending for some distance and running nearly parallel to the main street. This frontage of houses overlooks the coast, presenting from it a fine view out to sea and of the opposite coast of Fife. Near to Leith the coast road shelves downwards to the sea, and it is partly washed away and worn by its action. Westward, extending on through and beyond Trinity, the banks are high. Convenient bathing places are near hand, and opposite to the Chain Pier the character of the neighbourhood and houses is tasteful. The Edinburgh, Dundee, and Perth Railway passes by Trinity, so passenger accommodation to Newhaven is quick and easy; busses also ply.

Newhaven possesses a plentiful number of beer or public-houses, and can boast of two or three hotels famous for their fish dinners. A run down from Edinburgh to Newhaven in summer is a fashion much indulged in by the middle and working classes of "Auld Reekie" for sake of the peculiar fish dinners there obtainable. We had a curiosity to indulge as well as a useful mission to perform in visiting Newhaven; but the quest of information in Newhaven is "a pursuit of knowledge under difficulties," particularly if the fishwives think you are come to "take stock" of them. You must not show your pocket-book and ask questions and take notes at the same time, if you expect to go home wiser than you came; nor you must not scrutinize the women's head gear and garments too close, or you will hear a few expletives that the vocabulary of the Cockney Billingsgate never heard of. Like the Barony of Forth and Bargie, in the Co. Wexford, Newhaven has peculiar customs of its own. The Newhaven natives marry among themselves, and any of those whose loves cross that limit in the choice of a "better half," he goes out from among his class, or lives to be looked on with disfavour. The fishwives of Newhaven are the better men, like their counterpart of Fisherow: they work for their husbands, and they help them in aught that relates to their reciprocal advantage. Except the going out to sea they help their husbands in the adjustment of their gear and tackle, and the disposal of their take of fish. Mutually related by marriage one with another, it would be difficult to offend one native of the town without treading on the corns of the other. From personal observation, we must say that the men are in appearance a hardy, healthy race, and they appear to be very expert at the manipulation of their calling; but, like the fish when once out of their native element, your Newhaven fisherman is useless at the most ordinary occupations. Perhaps this may account for the neglected and untidy character of many of their homes and their surroundings. The fishermen's wives and daughters wear any amount of warm clothing—perhaps half a dozen of petticoats overlapping each other; from their rotund figure and churn waists the coils of the above garments cannot be much less. The wives and daughters of the fishermen have also another occupation, which they carry out with industry, diligence, and heavy toil. They most exclusively supply Edinburgh with oysters, which they carry in huge creels. A napkin forms their head-dress and a broad belt which rests across their forehead is attached to their basket or creel; this can be slipped off at a moment's notice when required. The head and neck is trained to act as a support for the heavy loads with which they are taxed. The remainder of their dress is a blue cloth jerkin and a display of several fancy neckerchiefs about their bosoms. Thick black stockings and tidy but strongly-fashioned shoes enclose their feet and legs; and when they are carrying their creels they can move along pretty briskly, and enjoy, notwithstanding their heavy loads, a continuous gossip.

The general character that the fishwives of Newhaven get at the hands of all those who have dealings with them is, that they ask three prices, or in other words, they often ask three times as much as they will finally take when beaten down in price. To their constant customers they are the reverse of exorbitant, or among themselves; but they are so well known for asking a high price, and not always getting it, it behoves them to keep up the high figure.

Whilst down among them a friend mentioned to us one or two traits of their character, which is borne out by their manners and what we saw ourselves. The story runs, that a certain Edinburgh lady was attempting to cheapen a Newhaven fishwife's merchandize one day, and was for cutting her down in the price of her fish. It was in hard weather. The Amazon eyed the city dame with a mingled look of scorn and pity, exclaiming—"Dinna fash noo, it is nae fish you are buying, d' ye ken, but the poor fishermen's lives." This outburst had the desired effect, and the price demanded was obtained.

The dwellings of fishermen are in no wise comfortable; several still are to be seen ranged along the main entrance to the town, two stories in height, a rough-built stone structure, with steps and landings on their outside leading to the top story, under which landing the door entry of the lower is stationed. Courts and alleys branch off behind, dirty and odorous of more than stale fishy smells. In these lanes may be seen drags, poles, nets, dog skin, floats, bladders, creels, lines, hooks, dried fish, anchors, boat gear, boats, and oars. Drying lines intersect those odorous lanes, and flapping sail-cloth, seal skins, and household and baby linen are in the wind, amid the clatter of ragged and noisy "bairns and masculine mithers." There is a parish church in Newhaven, and a free kirk and a parochial school.

Civilization is here, and there is food and raiment for all who can have it. The waters of the Forth are brimful of bracing health, and its depths are a mine of wealth to the hardy race of fishermen on its shore. But there is one thing that Newhaven lacks—cleanliness and improved dwellings. With this and with an impartial consideration from those in authority, of the facilities which the town and coast offer in the national interest, Newhaven would prosper. But it was with the Scotch as well as with the English Newhaven—ignorance, jealousy, and neglect on the part of partisans has worked a world of harm which a century or two may never undo, though it receive man's best exertions to that end.

THE LAW AND THE STINK!

ON the 18th ult. the case of Anne Loughnan *v.* the Corporation of the City of Dublin was heard in the Court of Queen's Bench, before the Lord Chief Justice and a Special Jury. It was an action for damages brought under Lord Campbell's Act by the widow of a workman who had lost his life in the employment of the Corporation while engaged in repairing a sewer at Benson-street, Sir John Rogerson's-quay, on the 4th of August, last year. Damages were laid at £1,000. The defence consisted of a denial of the alleged negligence, and a plea of contributory negligence.

Mr. Hemphill, Q C., in stating the case for plaintiff, said that the sewer in question in its progress to the point of discharge into the river passed by the Alliance Gas Works, Kurtz's Ammonia Works, Mooney's Vitriol Works, the Corporation Scavenging Depot, and Alexander's Vitriol Works, from each of which it received large quantities of offensive matter, emitting poisonous gases. In consequence of the corrosion of the sides of the sewer, it became necessary to repair them, and at one o'clock on the morning of the 4th of August last the deceased and six other men were sent down to execute the repairs. While they were engaged there a gush of poisonous gas came, and all the men were affected by it, the deceased and another man named Collins being suffocated. Defendants had previously received warnings with respect to the condition of the sewer two years before, and they had actually themselves insisted on Mr. Mooney making a sewer direct to the Liffey, but they had taken no steps with regard to the other sewers which communicated with the main sewer, in which the poisonous gases were still allowed to exist. In conclusion, counsel submitted that the jury should deal liberally with plaintiff, who had been left a widow with an infant daughter by the death of her husband, who was but thirty years of age when he came to his untimely end.

The plaintiff was examined, and stated that her husband's wages from the Corporation had been 11s. 8d. a week, with an allowance for night work, and he also earned about £20 a year by the rearing and selling of singing birds.

John Loughnan, one of the workmen engaged on the occasion of the fatal occurrence, stated the circumstances under which the deceased had lost his life. The manholes which tended to ventilate the sewer were all open at the time.

Dr. Mapother, medical officer of health, deposed that he examined the deceased on the day of his death, and found he had been poisoned by sulphuretted hydrogen and cyanogen, which is the gas of which prussic acid, the most instantly fatal gas known, is composed. Sulphuretted hydrogen is not so rapidly fatal. He and Dr. Cameron found sulphuretted hydrogen and cyanogen combined in the sewer, and, upon their report, remedial measures were partially adopted. The sulphuretted hydrogen, which caused the deaths of the two men, was a result of the wet lime process. In the case of a mixture of sulphuretted hydrogen with cyanogen he believed death would ensue in three or four seconds; but in the case of sulphuretted hydrogen alone it would take as many minutes. It was right to state that both of these gases, being heavier than the air, would sink to the bottom of the sewer, and the men that were killed probably were stretching towards the bottom when they were poisoned.

The Lord Chief Justice—Tell me, Dr. Mapother, have you walked along the quay recently, when the tide was out?—I have.

Did you perceive any offensive smell arising from the bed of the Liffey?—I did.

On your oath, do you believe it to be injurious to human life?—I do.

The Lord Chief Justice—*I believe it to be very injurious to human life; and if any of the jury complain of it I will adjourn the court, and I will leave it to the Government of the country and to the Corporation to provide some place in which justice can be carried on without injury to the lives of the jury.* You have sworn that, and I believe it.

Dr. C. A. Cameron, City Analyst, examined by Mr. Gibson.—Frequently made an examination of the sewer in question—first in 1866. The sewer was decaying by the action of the acids entering it, and that was the first cause which led me to report upon it. Mr. Neville, the City Engineer, directed that the new sewer made on that occasion should be constructed of bricks.

[Mr. Gibson here read an extract from a report made by the witness to the Corporation some years ago, in reference to the gases entering the sewer, which he stated to be most deleterious, and requiring a remedy.]

Examination continued—Suggested that two distinct sewers should be made—one from Mooney's Ammonia Works and the other from the Gas Works, conveying the refuse matter of their respective works separately to the river, so that they should not commingle in the sewer and evolve those poisonous gases.

The Lord Chief Justice—But all was to be safely lodged in the unfortunate river?

Dr. Cameron—It was only as a dire necessity that I suggested it. I quite concur in the opinion expressed by your lordship as to the river. I have been down in the sewer in question. I descended through a man-hole, step by step, very gradually, smelling as I went down. If I smelt anything I would have immediately come up.

The Lord Chief Justice—Are you quite sure of that?

Dr. Cameron—No doubt there was a little danger, but chemists always face a little danger of that kind. The sewer, however, had been open for some time, and the tide was out.

To Mr. Gibson—I warned the Corporation that that sewer might be dangerous to life. I think I did so more than once, but I did so two years ago at all events. There is no doubt that I stated that human life would be lost in all probability in Benson-street sewer—I recollect that distinctly—if certain things were not done.

To the Lord Chief Justice—It could be ascertained whether there is this poisonous gas in a sewer by lowering a candle, which, I believe, would have caused an explosion. Dr. Mapother showed me a gold pin, which he wore, which had been actually blackened by the gas in the sewer when he descended into it.

When the court resumed, after luncheon, Mr. Gibson said the smell in the Common Pleas was so bad that the Chief Justice felt compelled to remove the case at trial into the Court of Chancery, where it was now proceeding.

The Lord Chief Justice said he would give notice to the Corporation that this state of things arose from the citizens being ignorant of their rights. The Liffey had become *one of the greatest nuisances in Europe*, and he would strongly recommend those gentlemen who had undertaken to govern the city to see whether they could not do so in a way to prevent life being intolerable at a particular season to a large section of the inhabitants. The city could be made the most beautiful in Europe, instead of being, through the Liffey, a horrible nuisance.

A Juror (Mr. Talty) said he believed the money properly applicable to improve the city was carried off to another country, and applied for a different purpose.

The Lord Chief Justice—That is very probable.

Dr. Cameron was recalled, and in answer to a juror, said he believed the exhalations from the bed of the river, when stripped at low water, were injurious to the ordinary passers-by. There was purulent organic matter in atoms floating about.

The Chief Justice—This sort of thing is not to be endured. There is no use in talking about it. We must get at it some way.

Sergeant Armstrong—I quite agree with your lordship that there is no use in talking about it. The Corporation have no means of doing the work, and there was no use in asking Parliament to do it—at least an English Parliament.

The Lord Chief Justice—I have taken down the evidence as to this affair for another purpose besides this trial.

Mr. Ryan, Q.C., stated the case for defendants. He said the Corporation, who were the trustees of the citizens, deeply regretted the unhappy accident which caused plaintiff's husband to lose his life, but they were not answerable for it. They took every possible precaution to ensure the safety of the men who were repairing the sewer on that occasion. If the sewer were not repaired the tides would have caused floods which would have damaged property in the district to the extent of thousands of pounds, and if that took place they would certainly be responsible for it. There was a certain amount of risk attending the working in the sewers, but the labourers knew that, and were willing to encounter it, and voluntarily engaged in the service of the Corporation for the purpose. It would be proved that Loughnan knew there was some peril in working in the sewer, and that he frequently discussed the matter with the other men. All the Corporation could do was to employ the best officers and the best workmen, and leave them to take all proper precautions. The Corporation could not compel the Alliance Gas Company, who possessed statutory powers almost co-ordinate with their own, to adopt the iron process instead of the wet lime process in purifying their gas, and it was the sulphuretted hydrogen, produced by the wet lime process, that caused the death of Loughnan. All that the Corporation could do to make the sewer safe had been done. In 1867 they compelled the owners of the chemical works to make sewers, which carried their refuse direct to the river. Beyond that they could do nothing. It was very easy to abuse the Corporation for not cleansing the Liffey, and doing other things. In this case, hard though it might seem, the Corporation, as trustees of the ratepayers, were bound to protect the ratepayers' pockets.

Mr. Parke Neville, City Engineer, in reply to Sergeant Armstrong, stated that in 1867 the Corporation caused the proprietors of the chemical works to make sewers running directly into the river. He had been frequently down in the Benson-street sewer. Every precaution to render it safe as far as possible had been taken, as it was known that deleterious matter got into it. There were eight man-holes into it from the street at shorter intervals from each other than in the case of other sewers, so that the men working in it would never have far to go without coming to an opening to ascend; and these also tended to ventilate the sewer.

At the conclusion of his evidence Mr. Neville, referring to the observation of the Lord Chief Justice about the fetid condition of the Liffey, said the Corporation were not to blame, as they were doing their best. He was actually at present engaged in preparing the specifications to enable them *to go to Parliament next session on the subject!!*

The Lord Chief Justice—We are dealing here not with what provision may be made in future, but with what has already occurred.

Several of the workmen employed at the sewer were examined on behalf of defendants.

The evidence closed.

Sergeant Armstrong asked his Lordship to direct a verdict for defendants, on the ground that deceased was employed by the Corporation to descend into and repair sewers, and that he was fully aware of the risk necessarily incident to such employment.

The Chief Justice refused to give a direction, observing that there was a very serious case for the jury.

Sergeant Armstrong, in the course of his address for the defence, observed that he was surprised that the people residing on the banks of the river had not called a meeting to consider the subject. The only way to account for it was by the fact that the evil could be only removed by the aid of Parliament, and that the people had no faith in an English Parliament.

The Chief Justice observed that he had been for many years in Parliament, and he must say that if the 105 members were in earnest in their application it would be listened to.

Sergeant Armstrong said that was probably so. But if in London it was necessary to build a bridge, because it was in the line of approach to a palace, £380,000 were expended upon it out of the Consolidated Fund, without a note of objection; and yet they could not get £20,000 by the union of all the Irish members to widen Carlisle Bridge! But they could only blame themselves for not being in a position to be able to demand it, and to have it.

The Chief Justice, in charging the jury, read over the evidence, and commented upon several parts of it in a manner rather unfavourable for defendants' case.

The jury after several adjournments, could not agree, and a verdict was eventually taken for £150 damages. Costs to follow.

Next session the Liffey, we are told, will be *in Parliament!* We hope there will be for once some union amongst the CV. M.P.'s from the "Green Isle," and that some effectual remedy may be adopted for this fearful nuisance in the very centre of our city.

CIVIL SERVICE EXAMINATIONS.

BY an order in Council published in Tuesday's *Gazette* it is provided that the principle of open competition shall, on and after the 31st August next, be applied to all Civil Service appointments, except such as are included in the following schedule annexed to the order:

1. All situations to which the holder is appointed directly by the Crown.

2. All situations included in any order or warrant made by the Commissioners of the Treasury under section 4 of the Superannuation Act, 1851.

3. All situations which are filled, in the customary course of promotion, by persons previously serving in the same department.

It is, however, provided that in cases where the chief of the department and the Lords of the Treasury may be of opinion that for the sake of special knowledge or other reasons of public interest examination should be wholly or partially dispensed with, the Civil Service Commissioners may dispense with examination, wholly or partially, and may grant their certificate of qualification upon evidence satisfactory to them that the person to be appointed possesses the requisite knowledge and ability, and is duly qualified in respect of age, health, and character.

By Clause III. it is provided that, with the exceptions mentioned above, no appointment shall be made unless the person to be appointed shall be reported by the Commissioners to have satisfied them:

1st. That he is within the limits of age prescribed for the situation or employment to which he desires to be admitted.

2nd. That he is free from any physical defect or disease which would be likely to interfere with the proper discharge of his duties.

3rd. That his character is such as to qualify him for such situation or employment; and,

4th. That he possesses the requisite knowledge and ability to enter on the discharge of his official duties.

Clause VI. contains the following provisions:—

After the candidate, reported as aforesaid by the Commissioners, has been appointed to an office or employment, he shall enter on a period of probation, during which his conduct and capacity in the transaction of business shall be subjoined to such tests as may be determined by the chief of the department to which he is attached, and he shall not remain in the public service after six months from the date of his appointment, unless satisfactory proofs of his fitness shall have been furnished to the chief of the department, and a certificate of his qualification shall have been issued by the Civil Service Commissioners. A formal record of the particulars and of the result of such probation, signed by the chief of the department, shall be furnished to the Civil Service Commissioners, and filed in their office, and they shall thereupon, and not sooner, if such record should be satisfactory, issue their certificate of the candidate's qualification for employment. The candidate, after no less than before the issue of such certificate, shall hold his office at the pleasure of the chief of his department.

TASMANIA IN 1870.

THE following is portion of a paper entitled "Notes for intending Emigrants," which has been drawn up by one who has had fifty years' experience in that colony. It appears in a supplement to the Hobart Town *Mercury* of April 21st, just to hand:—

Tasmania is an island at the southern extremity of the Continent of New Holland, from which it is divided by Bass's Strait, 120 miles wide. The surface is diversified by ranges of hills and valleys, with occasionally large plains, and it is probably the most healthy of all the British colonies, for it is neither too hot in summer nor too cold in winter to be agreeable. The spring months are September, October, and November; the summer, December, January, and February; the autumn, March, April, and May; and the winter, June, July, and August. Taking the average of 25 years, the mean heat of spring is 54°; summer, 62°; autumn, 55°; and winter, 47°. Rain falls, on an average, 145 days in the year, with a rainfall of 22 inches.

There is an electric cable between Tasmania and four of the colonies on the Continent of New Holland—namely, New South Wales, Victoria, South Australia and Queensland; and a company has been formed to connect Tasmania with the British-Australian telegraph line from Point de Galle, in Ceylon, *viâ* Java, early in 1871. It is also in contemplation by the same company to connect New Zealand by their line.

There is a regular mail communication with Great Britain, *viâ* Galle, every four weeks, the mails being brought over from Melbourne to Launceston by branch steamers, and immediately despatched over the island, within which are 124 post towns or post stations, from and to which regular mail communication is established, the postage of letters in town being one penny; if within five miles of town or within a country district, twopence; all over the rest of the colony, fourpence; ship letters, sixpence. There is no postage on newspapers to the United Kingdom or the other colonies. The post-office money order system in force is as follows:—Money orders, 6d. for £5 and under; 1s. above £5 and up to £10, within the colony; double that charge for orders on the Australian colonies and New Zealand; while for orders on Great Britain or Ireland the charge is 1s. up to £2; 2s. 6d. up to £5; 3s. 6d. up to £7; and 5s. up to £10.

A powerful steamer plies twice a month between Sydney, the capital city of New South Wales, and Hobart Town; and one plies twice a month between Melbourne, the capital city of Victoria, and Hobart Town; and two ply eight times a month between Launceston and Melbourne. A number of sailing vessels trade between Tasmania and Adelaide (the capital city of South Australia), Queensland, Melbourne, and other ports in Victoria, and New Zealand, the distance of the last-named colony being 1,000 miles.

The island contains 15½ million acres of land, and the islands connected with it contain 1½ million acres. 3,760,000 acres have been sold or given to settlers by the Crown, leaving the Crown land property at about 13,000,000 acres. The colony is divided into eighteen counties.

Besides the corporations of the city of Hobart Town and town of Launceston, there are nineteen rural municipal councils in the colony, each with its warden and a sufficient police.

Benevolent societies, working men's clubs, homes for poor, an asylum for insane, hospitals for the sick, an asylum for orphans, three for paupers, reformatories, boys' home, city missions, temperance societies, Odd Fellows' societies, Freemason's lodges, gardener's societies, agricultural associations, &c., have been established and are in active operation.

The main road across the country, from the port of Hobart Town to that of Launceston, is 120 miles long, and is maintained in excellent order by the colonial government; all the other roads are under the care of trustees, who raise rates for their maintenance and repair. The various well-constructed and judiciously laid out roads, together with the excellent bridges which have been built over the several rivers, excite the surprise of persons visiting the colony, and afford innumerable benefits to the settlers using them.

The railway from the port of Launceston to Deloraine, which passes for 45 miles through the best agricultural lands of the colony, is nearly completed, and will be open for traffic in the present year.

The price of Crown land is £1 an acre, but the purchaser of above £15 worth may have his payments extended over eight years; or, by another regulation with regard to what are called "The Agricultural Areas," he may purchase up to one hundred acres at £1 an acre; and, after paying in cash one-thirtieth, he may be allowed to pay off the remainder by instalments within fourteen years, or he may lease not more than 100 acres for twenty years at 6d. an acre for the first two years, 1s. an acre for the next two years, and 2s. an acre for the remainder of the twenty years—and he may purchase his tenancy at any time during the twenty years at £1 an acre.

Two daily and seven other newspapers are published in Hobart Town, and four in Launceston.

The population of Tasmania is upwards of 100,000, of whom 45,000 are females. The death-rate of 1869 was less than 13 to the 1,000 of the population. The number of houses exceeds 20,000.

Fifty-eight medical men practise their professions throughout the island.

Two hundred churches and chapels are erected in various parts; and in addition to numerous private schools, there are 109 government schools, having 8,700 names of scholars on the books, and several scholarships are maintained by the colony, the best being the two annual Tasmanian Scholarships, tenable at an English university for four years, of £200 a-year each.

Besides the Supreme Court of the colony, courts have been established in the various counties for the recovery of wages and small debts.

The exports of the island are principally wool, flour and grain, fruit and preserves, hops, horses, sperm oil, timber, vegetables, and tanning bark, the total value being about £920,000.

The land in cultivation on 31st March, 1869, was 287,000 acres. There were then 22,512 horses, 105,450 horned cattle, 1,715,617 sheep, and 55,222 pigs.

THE "BRIDGE" FIGHT.

MR. George Gordon Page, A.I.C.E., appears again before the public to explain certain matters in controversy between himself and Messrs. Lanyon, Lynn and Lanyon, respecting the designs submitted about eight years ago for a "New Carlisle Bridge." We must content ourselves with reprinting such portions of the lengthy document as may be of interest to our readers. After some prefatory remarks Mr. Page proceeds:—

Allow me to protest against the attempt of Messrs. Lanyon, Lynn and Lanyon to influence public opinion in favour of their rejected design, to the prejudice of Mr. Turner and myself, the authors of the first premiated design, and to oust us from a position which we have gained by a fair and honourable competition. The position of myself and Mr. Turner in regard to this work was awarded in a *bonâ fidé* competition open to all, and in which Messrs. Lanyon, Lynn and Lanyon also competed with "three" designs. The question of engineering construction, of fitness, and of cost, I am quite willing to discuss in the proper quarter. In the competition the requirements were realized by us so completely that the judges awarded us the first prize; but if the requirements of the committee of the present movement are changed as to material, number of spans, position of piers, cost, unity of effect with surrounding buildings, and as to the disposition of statues, we shall be able to satisfy the committee by a fresh design.

My coadjutor in the matter is an Irishman; we always contemplated the employment of Irish labour, so we have an equal amount of Irish element with Messrs. Lanyon, Lynn and Lanyon.

I must, however, make a few remarks on the extraordinary way suggested by Messrs. Lanyon, Lynn and Lanyon for solving the problem of "How to construct a bridge the full width of Sackville-street, at a minimum cost, and of the most permanent materials, having a level roadway, a maximum waterway," &c.

In the first place they "submit that the bridge is of stone, a material that admits of no question, possessing as it does such superior advantages in every respect, and more particularly in this case, over iron," &c., "in its economy, in its permanence."

In answer to these points, I would observe, that within the last few years on one river, for example, the Thames, no less than three important stone bridges have been destroyed by time (namely, through the failure of the foundations of the piers in the middle of the river), and replaced by iron bridges, viz., Westminster-bridge, completed A.D. 1750, replaced by my father's bridge of iron with iron foundations; Blackfriars-bridge, completed A.D. 1771; and Walton-bridge, completed A.D. 1750.

Now we have bridges of cast-iron which have been erected many years; for example—

Bridge.	Span Feet.	Date of Completion.	Engineer.
Colebrook Dale, over the Severn	100·5	1779	Darby.
Sunderland	240	1796	Wilson.
Buildwas, over the Severn	130	1796	Telford.
Avon, at Bristol	100	1806	Jessop.
At Bonar, over an arm of the sea	150	1812	Telford.
Vauxhall-bridge, over the Thames	78	1816	Walker.
Southwark, do. do.	240	1818	Rennie.
Tewkesbury-bridge ..	170	1826	Telford.
Bridge over Lary, at Plymouth	100	1827	Rendel.

All these bridges are standing monuments of engineering skill and durability of *cast iron*.

Messrs. Lanyon, Lynn and Lanyon put forward that their two-arched stone bridge (towers not included) can be erected for £44,000, "a sum less than any single arch iron bridge can be put up for." I differ from them in this entirely—as with regard to economy of construction it is patent to all engineers that iron bridges can be built considerably cheaper than stone bridges.

In the first place, I will give three examples of stone bridges, with spans considerably wider than proposed by Messrs. Lanyon, Lynn and Lanyon, and consequently less costly in foundations.

London-bridge, of granite, with an area of road and footway of 47,912 superficial feet, cost £542,150, or £11 6s. per foot superficial.

Waterloo-bridge, granite, with an area of road and footway of 57,270 feet, cost £579,915, or £10 per foot superficial.

Old Westminster-bridge, of Portland stone, 49,880 superficial feet, cost £389,500, or £7 16s. per superficial foot.

Now, Messrs. Lanyon, Lynn and Lanyon propose to erect a monumental bridge of granite or limestone, having a superficial area of 24,018 feet, more than half the area of London-bridge (which cost £542,150), for £44,000, or thirty-six shillings and sevenpence per foot super!!! in place of £11 6s.

I may observe that Messrs. Lanyon, Lynn and Lanyon, in the competition, estimated their design B for an iron bridge at £36,300, so that their two estimates in themselves contradict their present statement, that a stone bridge can be erected *cheaper than an iron bridge.*

According to the estimates of the competition, I see there are no less than thirty-eight designs for iron bridges below £44,000.

I may state, as a fact, that I have designed and superintended the erection of a cast-iron arched bridge, 100 feet span, for heavy traffic, at the rate of 12s. 6d. per superficial foot, but would, of course, recommend a much better class of bridge for this position.

It would appear to me that the so-called estimate of Messrs. Meade and Son cannot have been based upon proper information, viz., complete working drawings, specifications, and quantities.

I cannot at all agree with Messrs. Lanyon, Lynn and Lanyon that the "waterway is obstructed to the least possible extent," by placing a piece of masonry at least 152 feet 6 inches long in the mid-channel of the river and forming two little arches 64 feet span; and it does not require an engineer to demonstrate that the bridge which affords the maximum waterway is an arch or opening of one span which does not interfere with the natural flow of the tidal waters.

Our iron arch springing clear of high water, and giving a practically level roadway above, affords a waterway of 140 feet, or an additional sectional area at spring tides of 240 square feet beyond the waterway afforded by the design "In Memoriam" of Messrs. Lanyon, Lynn and Lanyon.

Finally, our single-arch bridge can be erected without the expensive expedient of a temporary bridge in precisely the same method as was successfully carried out at Westminster, a method presenting no difficulty in an arch constructed of separate iron ribs, but which would be altogether at variance with the proper construction of a stone arch, the whole of which ought to be built and bonded together intact before the centres are struck; and further, if this method were attempted in the reconstruction of the Carlisle-bridge, according to the design of Messrs. Lanyon, Lynn and Lanyon, the waterway would be so obstructed during construction by the two piers of the present bridge, the almost complete blocking of the present centre arch by the cofferdam necessary for the foundation of the new pier, and the partial blocking up of the two side arches by the two cofferdams for the abutment, the rows of piles and staging for building, and the centering—making altogether a mass of obstruction which could hardly resist the force of a strong flood. In our design, having no central pier, and no centering, the temporary obstruction of the river would be comparatively insignificant.

GOVERNMENT SCHOOL OF ART, BELFAST.

We (*Newsletter*) have much pleasure in being able to announce that the projected re-establishment of our School of Art will very soon become an accomplished fact, and that, too, under auspices which give the fairest promise of success. As our readers are aware, a committee of gentlemen, desirous of advancing art-education here, has been devoting much zeal and labour to the task of collecting information in regard to art schools in existence elsewhere. This committee has reported to the provisional committee, and a board of managers for the year has been duly appointed. Further, the negociations for leasing the buildings formerly occupied by the institution which it is now sought to resuscitate have terminated in the most satisfactory manner; and we should add that the promoters of this movement found those concerned with the matter generous, friendly, and public-spirited to an extent worthy of the object in view. Steps are being taken to obtain a thoroughly efficient head master, and we believe we are correct in stating that it is the intention of the board to open the school in August, or early in September. The connection of the school with Kensington cannot fail to be productive of great advantage. It differs from that formerly subsisting in some respects. The basis of the present connection is the same as that regulating the science schools, being a system of payment by results, the schools being of course open to Government inspection, without control or dictation; so that all the advantages, which are neither few nor unimportant, resulting from connection with the department will be enjoyed by the revived school without any embarrassing restraints. The school will gain not alone prestige from the imperial association, but the very substantial privilege for its pupils to compete in the national art competitions for bonuses, medals, and prizes. Examples, casts, copies, &c., will, under this connection, be supplied at one-fourth the ordinary price. The school is intended mainly for the artizans of this town. We need not say that they have begun to see the necessity of attending to art-education, in so far, at least, as it concerns their immediate pursuits. It is out of the question that we should any longer continue to resort to foreign sources for our designs, not by reason of any narrow national prejudice, for men will discover and patronise the best and cheapest markets wherever they are, but because the means of supplying the demand exist at our very doors, and merely await equipment. But to both employers and employed the revived project is one of the greatest importance, and one deserving the cordial co-operation of both. The revived scheme, however, will not confine its functions to night schools for the instruction of artizans who could not attend during the day. Day classes, for the cultivation of art in all its branches, will be opened to the general public; and as time wears on, and the institution comes to be endowed with scholarships and exhibitions, we doubt not that it will realise an ambition which shall dwarf the best efforts of its predecessor, though it was the parent of a goodly number of distinguished men.

So much for the general scope and purpose of the establishment. A few facts remain to be added. The board of managers are now taking steps to raise a sufficient sum of money to start the school in the best possible way. A considerable sum will be required, in the first instance, to remodel and refit the rooms, and to procure a complete set of appliances of all kinds, and an adequate assortment of examples. The board have full confidence, however, that the liberality of employers and others interested in the progress of education will place them in a position to make the school at once thoroughly efficient. It is hoped that, at the end of a couple of years, the school will be, so far as mere instruction is concerned, mainly self-supporting; but it will, of course, be of the greatest importance that the board should be able, from year to year, to offer inducement and stimulus to progress in art, by giving prizes for the encouragement of successful pupils, and pecuniary assistance to those who, while giving great promise, are not so circumstanced as to be able to complete their art studies.

For these and other purposes it will be necessary that the art board shall have an annual income beyond that derived from the fees of the school. It is intended that the members of the art association, now constituted, shall fill up by vote at an annual meeting the ten vacancies on the board of managers, and it is hoped that by thus throwing the control of the school into the hands of the public, and extending to the utmost the responsibility of its management, a large amount of sympathy and interest may be enlisted in its success. It is intended to invite all those gentlemen connected with the Province of Ulster who are interested in the progress of art, and in the instruction of the artisan classes in those branches which specially bear upon the staple industries of the province, to form themselves into an Ulster Art Association to further these objects. Members of the association will be asked to subscribe not less than £1 annually to the funds of the central school; the fund to be under the control of the board of managers. The board of management consists of thirty members. Dr. Wyvile Thomson is the first chairman, Mr. Vere Foster, vice-chairman, Mr. W. Dunville and Mr. James Combe treasurers, and Mr. William Shepherd, secretary.

BOOKS RECEIVED.

A Tour through Canada and the State of New York. Dublin: Irish Builder Office.

The above is the title of a paper read before the Irish Civil Service Literary Society by Mr. Bernard Connor, its honorary secretary, and which has been published at the request of several members of that creditable and well-organized body. In his opening page the author informs his readers that he is aware "that many of our ablest writers have visited America with a view to studying its institutions and customs, and the habits and manners of its people, and have subsequently enlightened the world on the result of their observations." He nevertheless indulges the hope that his *brochure* may find favor in public estimation as being "the simple recital of an unprejudiced tourist, who went there with a sincere desire to see for himself, and to judge of the accuracy of the descriptions which he had read."

Mr. Connor gives some pleasing, though brief, descriptions of Quebec, Montreal, the Falls of Niagara, &c. Of the latter he says:

> "Having arrived at the Falls, perhaps I should avail myself of the usual subterfuge when one's descriptive powers are not equal to the occasion, and say that they can be better imagined than described. How often have they been described, and yet how faint an idea can any description convey of the reality. I shall not attempt to imitate any of those ambitious descriptions,—I shall merely state my own impressions of them. The first idea they convey is, that you are in front of a park of artillery in full play. There is nothing but a cloud of smoke in front, with a deafening cannonade behind. As you approach closer, the Falls can be seen more distinctly. There are two Falls—the American and the Canadian or Horse-shoe Fall. Standing on the American side, within a few feet of the American Fall, you observe that it extends in a straight line for about 300 yards, until it meets Goat Island, and that the Horse-shoe Fall extends from the other side of the island to the Canadian shore. The height of the Fall is 160 feet. Looking over the edge you cannot see much more than half way down, as, from the force with which the water descends, the spray from the bottom rises in a bluish white cloud to a considerable height, suggesting the idea of a huge fire raging beneath. To get from the American to the Canadian side it will be necessary to cross the great suspension bridge, which is one of the most extraordinary engineering achievements in the world. It was only erected last May, and must not be confounded with the old suspension bridge which crosses the river lower down, at a much narrower point. The new bridge extends from the American side to Clifton House on the Canadian side, exactly where Blondin crossed on a tight-rope some years ago. It is one-fourth of a mile in length. There is a space in the centre sufficiently wide for the largest and heaviest waggons, and on each side of this two foot passengers can walk abreast. It is suspended by massive wire cables from a wooden tower 100 feet high at either side of the river. Each cable consists of seven wire ropes, and each rope of seven strands of wire. To prevent an oscillating motion, wire ropes are attached to the sides of the bridge and embedded in the river. Even with these precautions, the oscillation in the centre of the bridge is sometimes very considerable. The height of the bridge from the river is 200 feet, and the depth of the river beneath is 250 feet. From the increasing traffic, the bridge is about being widened by being split in two and having additional timber inserted in the centre. The wooden towers are also to be replaced by solid stone towers. The charge for crossing is a quarter of a dollar. The view from the bridge embraces both Falls, Goat Island, and a considerable portion of the surrounding country."

THE BELFAST WORKMEN'S EXHIBITION—SURPLUS FUNDS.

The following letter has appeared in the *Northern Whig*. As we have already said something about the late exhibition, we think it right to reproduce this from our esteemed friend, the author:—

> "Sir,—The committee selected worthy objects for the manifestation of their generosity, but they acted, I believe, on a most erroneous principle when they assumed that the guarantors had a right to the whole surplus, and then voted a part of that surplus to their own members. I hold the general committee, who appointed the executive committee, alone had the power of distributing the surplus funds, and the general committee should carry out the suggestion of the London committee of the International Exhibition, at whose instigation the local exhibition was held, and the third of their printed suggestions is as follows:—'In order that this exhibition may be turned to the utmost possible advantage, that the profits of such local exhibitions be set aside as a fund for the establishment or for the support of schools of art and design,' &c., &c. I therefore (as I have done before) strongly urge that the balance, or a good portion of it, should be handed over to the Local School of Art in process of formation. My suggestion before the Exhibition opened was declared to be premature, and now when my anticipations of a surplus have been realised, and rewards have been so freely bestowed, I hope the committee will favourably consider my suggestion, and generously support the local School of Art just formed under promising circumstances, and which is calculated to be of the highest value to the working classes of Belfast. Independent of the very wise suggestion of the London Committee, the promoters of the Belfast Exhibition should be the foremost advocates for a School of Art, for the friends of art were their chief supporters at the recent Exhibition, and it would be, at least, a graceful return to the art patrons who lent their treasures for exhibition if the committee devoted to the purposes of art no small portion of the funds the art department was mainly instrumental in accumulating.
>
> "I would be the last to say anything against the 'Workmen's Institute,' or, as it should properly be called, 'The Temperance Hall,' but, unfortunately, as the temperance movement is not popular with working men as such, the advantages of such an institution must be limited to only a section of the working classes.
>
> "William Gray.
>
> "Mount Charles, June 22, 1870."

NEW PATENTS.

W. BENNETT AND J. CURRALL, Birmingham, "*Kitchen Ranges*."—This consists, first, of a fire-panel placed over the fire, and resting on the hobs, and having a front plate for filling the opening left by the "fall bar" when down. A soot pipe or flue is fixed on the top of the fire panel, the said pipe or flue passing through an opening in the top cover of the grate. A plate at the back of the panel closes the opening at the back of the grate. The draught is regulated by a throttle valve in the flue. In order to obtain more heating surface the pipe or flue, after ascending, may be made to descend through a short elbow down a second pipe or flue before passing to the chimney: in either case the opening at the back of the grate is closed, or the flues may be situated horizontally, so as to project from the grates.

F. N. TARGET, Colyton, "*Water-closets*."—This relates to improvements which are applicable to all water-closets, but more particularly to pan closets: and consists, first, in a particular form of valve or cup for the bottom of the basin, as a substitute for the valves or cups now in use. Secondly, in fitting a funnel-shaped receiver to the bottom of the pan to receive the excrement, and lead it into the soil pipe. Thirdly, in fitting a waste water-pipe to the bottom of the pan to carry off the water which collects round the funnel above mentioned, and lead it into the sewer or drain. Fourthly, in arranging the mechanism so that the valve to the basin is made to open automatically when a person sits on the seat, or when the cover is raised, and to close at the moment the water is admitted, instead of opening, as usual.

R. ROBEY AND J. RICHARDSON, Lincoln, "*Steam engine governors*."—The inventors mount the governor on the crank shaft of the engine, and connect it with the eccentric wheel which regulates the admission of steam to the cylinder in such manner that the governor may act to vary the throw and the angular lead of the eccentric. The valve actuated by the eccentric is thus caused to admit steam to the cylinder during a greater or less portion of the stroke, so as to maintain an approximately uniform speed, however the load upon the engine may vary.

MISCELLANEOUS.

BELFAST AND NORTH OF IRELAND EXHIBITION.—On Saturday, 18th ult., a meeting of the executive committee of the recent Exhibition was held in the Town Hall. Mr. M'Calmont read the minutes of the working men's committee, which recommended that £100, or such further sum as the executive committee might deem advisable, be presented to Mr. William Kirkpatrick, in recognition of his great services in promoting the first Belfast and North of Ireland Exhibition; that a sum of £20, or such larger amount as the committee might deem advisable, be presented to Mr. D. Pettigrew for his services as chairman of the working men's committee; that £50 or a larger amount be paid to the General Hospital in the name of the honorary secretary of the Exhibition; and that a sum be appropriated for the purpose of sending a number of the working men's committee to the London Exhibition. In reply to the Mayor, the secretary said that all the accounts, with one or two exceptions, had been handed in and passed the financial committee, and he believed the surplus would amount to about £700. A sum of £200 was voted to Mr Kirkpatrick. Mr. Horner then moved that a sum of £150 be paid over to the funds of the General Hospital in the names of Messrs. Kirkpatrick, Pettigrew, and Hagan, which would constitute them life governors of the institution, This was also agreed to.

Professor Gould has found that the velocity of the electric waves through the Atlantic cables is from 7000 to 8000 miles per second, and depends somewhat upon whether the circuit is formed by the two cables or by one cable and the earth. Telegraph wires upon poles in the air conduct the waves with a velocity a little more than double this; and it is remarked, as a curious fact, that the rapidity of the transmission increases with the distance between the wire and the earth, or the height of the support. Wires buried in the earth likewise transmit slowly, like submarine cables. Wires upon poles, but slightly elevated, transmit signals with a velocity of 12,000 miles per second, while those at a considerable height give a velocity of 16,000 or 20,000 miles.

NEWRY AND ARMAGH AND NEWRY AND GREENORE RAILWAYS.—A telegram received from London on Wednesday announced the passing of both these railway bills by a committee of the House of Commons. This is a matter of paramount importance to the interest and prosperity of Newry and Armagh. We (*Ulster Gazette*) desire no contest with the Ulster Company; but we wish for the natural and legitimate traffic of the district—not interfering with Belfast, and not to be interfered with by her or her agents. The cutting of Carlingford Bar, the establishment of Greenore, and the formation of the Dundalk and Greenore line being accomplished, the making of the line from Greenore to Newry must soon become an accomplished fact. Without it all the others were incomplete; but with it we should possess a regular and perfect system of communication between England and nearly every part of Ireland. The London and North Western Railway Company, who are constructing the Dundalk and Greenore line, should apply themselves to the making of the Newry and Greenore line also. Considerable progress has already been made in the works, and a little help—which could well be given by so rich a company as the London and North Western—would suffice to complete the undertaking. This is most desirable for the prosperity of the Newry and Armagh line; and it is hoped that the shareholders will not fail to perform their part. The telegrams refersed to informs us that the preamble of the Newry and Armagh Bill has been proved, and that claims must be settled in accordance with it. We may congratulate the directors and shareholders as well as the public on the present aspect of affairs in connection with these lines of railway.

The first patent for a steam road roller was taken out in France at the beginning of 1859 by M. Louis Lemoine, of Bordeaux. His roller was not patented in England, nor ever fully described in any publication. At the meeting on the 13th of February, 1861, of the *Société d'Encouragement*, the well known engineer, M. Combes, is recorded to have described—though his description is not given in the *Bulletin* of the Society—Lemoine's roller, which he had seen at work on the Bordeaux roads. M. Lemoine was then an *employé* of the Bordeaux municipality. This steam roller appears to have consisted of one main roller for doing the work; the engine, weighing in all only about 10 tons, being steered by a pair of side wheels, the axles of which, by means of gearing, could be set at varying angles to the main roller. In 1860 M. Lemoine's roller was tried on the road of the *Bois de Boulogne*. Ballison's steam-roller, patented in France in August, 1860, and now in use by Gelleart and Co., the Paris Steam Road-rolling Company, was also there tried in August of the following year. In 1862 experiments were carried out with both these steam-rollers by the French engineers of the State, MM. Darcell and Labry, who gave an account of them in an unpublished report of May of that year. They expressed strong opinions in favour of steam-rolling in general, giving the preference to the Ballison roller. An extract from this report was printed in M. Homberg's *Notice sur les voies empierrèes et asphaltèes de Paris* (1865). They observe that the only possible apparent objection to steam-rollers is their frightening the horses. We understand from M. Lemoine that since these trials he has made several different forms of rollers, now at work in Bordeaux and its environs. By this time the system has firmly established itself in Paris and elsewhere in France by a success extending over more than seven years.

Advertising ingenuity has left little room for novelty, but a merchant in Newark, New York state, has challenged attention by leaving his space entirely blank, with the following note, in fine print, at the bottom—"This space was sold to A. E. Brennan; but as his business is sufficiently brisk already, *he declines to use it!*"

It is understood that application has been made for letters patent for constructing a cylindrical iron kerb for reception, repairing and maintaining telegraph wires, to be of the same external form and size as the stone kerb now in use. Should this, in the opinion of practical men, be available, it must be a means of extending telegraphic communication, and prove of great public utility and economy, by preventing the constant necessity of taking up the roadways and pavements.

THE SMALL BEGINNINGS OF GREAT ENDINGS.—A poor woman in Constantinople, the other day, was about to go to the upper floor of her living-place to bring down the *mangal*, or pan of lighted charcoal, for cooking; but, feeling lazy—the day was warm—sent her child for it. The child let the pan fall on the stairs, near a window-curtain; and the result of the woman's change of mind was that terrible fire we have all heard of, which has reduced 30,000 persons to destitution, utterly destroying many hundreds of them, and some thousands of houses. If a neighbour had give the poor woman £10,000 not to send the child, it would have been a good bargain.—*Builder*.

A diving apparatus, on a large and very complete scale, is in course of shipment by the P. and O. route to Singapore. The want of such an apparatus has long been felt in the straits, and much valuable cargo, and even vessels will now be recovered. With the numerous losses which occur in the neighbouring straits and passages in the China and Java seas, there will be ample employment. The machine will be fitted up on a vessel, and worked under the charge of Messrs. Harrison, Smith, and Co.

FLOATOSTATIC BREAKWATER, by Mr. John King, Engineer and Manager of the Carazal Railway, Chili.—This invention is based on two well-known laws connected with the motion of waves. It is known, in the first place, that the wavy agitation of water by wind does not extend very deep beneath the surface of the water; secondly, that the motion of the water in forming waves is almost entirely a succession of undulations, and has very little forward motion until the waves reach comparatively shallow waters when they become waves of translation, and exert their greatest destructive power. The inventor proposes to construct a wall of iron or other suitable material, which is to be placed vertically in the water to seaward of the place to be protected, and to be of sufficient height that its lower edge will reach below the waves to comparatively calm water, while its upper edge will project above the water a sufficient distance to form the breakwater. It will be supported by a water-tight compartment, or by a series of water-tight compartments, placed near the upper edge of the vertical plate or wall. The whole structure will be strengthened by vertical ribbed horizontal girders, to insure stiffness and locally by T and angle irons. It will be anchored laterally by anchors, the chains of which will pass through hawse pipes in the lower edge, up through the floating drum, by means of water-tight pipes, to the upper edge, where they will be fastened, and where they may be tightened or slackened as may be necessary. The chains may also have weights attached to them to take up the slack at low-water. In seas such as the Mediterranean, where there is little or no rise and fall of tide, there may be attached in addition a vertical weight of stone or other material, which shall rest on the bottom of the sea for the purpose of holding the structure rigidly down. The floating power is by preference placed on one side of the vertical wall, so that the structure will incline towards the sea when in its normal position, and when the force of the waves drive against it a vertical plane will be presented to them, with no projections on which water may catch. The floating power will be made so great that the horizontal force or pressure of the water at the top will not be sufficient to submerge the structure, which will be made in sections of convenient length, connected by hinges, to admit of a slight lateral movement. When wave strikes at the top the structure will only yield to a slight degree, owing to the great surface exposed to the still water on the opposite side, and the force of the waves will be almost completely checked. For the coast of Chili, for instance, the inventor proposes to make a breakwater of this description in sections of 300ft. long by 60ft. deep, 44ft. of which will be under water; each section will weigh about 500 tons, and cost about £10,000, inclusive of anchors, chains, &c.—*Engineer*.

POSTAL REGULATIONS.—We understand that, simultaneously with the establishment of halfpenny postage on newspapers and printed matter, an order is to be issued requiring the payment of a penny additional postage on every letter in every case in which the postmen shall have to knock at doors and to be delayed in their walk. This is an admirable arrangement, as it will lead to every person putting up a letter-box, which is but reasonable, as, when the post-office are giving such increased advantages to the public, the public ought on their part to give every facility and convenience to the postmen in the performance of their duty.

MODERN CUSTOMS.—Presentations and Testimonia's are largely on the increase; this modern custom appears to extend to almost every household, for no auspicious event is allowed to pass without its being marked by some pleasing souvenir; Birthdays, Christenings, Marriages, the seasons of the year, such as Christmas, New Year, &c., invariably receive special commemoration The attention of one of the great London Manufacturers, Mr. J W. BENSON, of 25, Old Bond Street, and of the City Steam Factory, Ludgate Hill, has been directed to this subject. With the view of giving more artistic effect to this custom of society, he has published a most interesting Illustrated Historical Pamphlet upon Watches and Clocks, also one upon artistic Gold Jewellery, Silver and Electro plate; all are profusely illustrated with choice designs, and are sent post free for 2d. each, thus bringing within the reach of those who live even thousands of miles away from London, one of the largest and most artistic collections which can be seen in any part of the world; and, if necessary, designs are propared to illustrate any special case.

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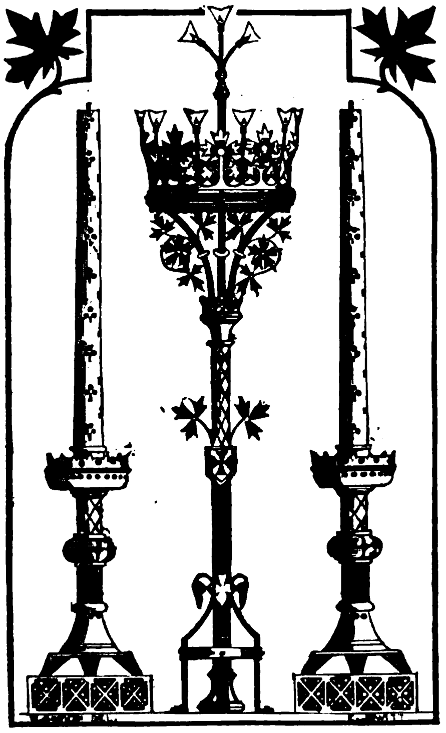

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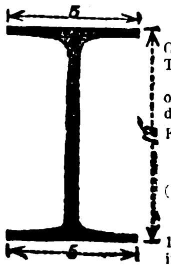

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The Irish Builder.

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Memorials of "Mud Island."

WE are unable to inform the reader at what particular date the cognomen of "Mud Island" was given to that famous *locale* situated between the Royal Canal and the River Tolka on the north and south, and bounded east and west by the North Strand and the Ballybough Road; but we think we may with some degree of truth affirm that it received its name from its low, marshy situation, and from being at one time at a no distant date under the influence of the sea. Mud Island, even within the present century, can be remembered as little better than a swampy and low common, presenting here and there a few dozen of straggling mud cabins, and in its more elevated quarters some sand pits. Mud Island, however, is a celebrated district, not only in the local annals of Dublin, but as a spot universally famous for its recollections, surroundings, and the daring deeds of its dare-devils and denizens. The "Liberty Boys" were once a terror on the banks of the Poddle, and the blooded roughs, of Kennedy's-lane, Back-lane, and Bull-alley sent a thrill through the city's heart whenever their assumed privileges were interfered with or their pride wounded. And the Ormond boys and the Amazons of Pill-lane fraternised on occasions to flagellate the weavers' "drabs" on the Coombe who dare to say, or even insinuate, "that black was the white of my eye." The glories of the Poddle, however, are long since departed, and the recollections of the Bradogue are covered over like the stream itself, but the memories by the Tolka are yet hale and mellow. What is poor Stonybatter after all, compared with Mud Island in reminiscences, or suckling Dollymount, whose tender constitution would have had long since broken up had it not been freshened up by the wild breezes aslant the yellow sand and water of Crab Lake, or smiled upon by the heath-crowned peaks of Ben Heder?—but enough.

Mud Island now is no longer a common, but a large district, with a thick, matted and fastly-increasing population. It is ramified by several streets and lanes, but the character of its architecture, if we can use the word, is very mean indeed; added to this, we cannot speak favourably of the sanitary condition of the neighbourhood. The ground is low, and at high tide the sewers of the neighbourhood are subject more or less to tidal action. Its drainage is still imperfect, and the Corporation for years have been often blamed for their almost total neglect of this district. At the present time, however, compared with what it was a quarter of a century since, or even a dozen of years since, it shows a marked improvement. That portion of it that lies nearer to the river, and in the vicinity of the vitriol works, is covered by a large number of houses or cabins, which are from their construction, not very habitable, and consequently they cannot be expected to be healthy. It is a strange fact, however, that during the prevalence of the first cholera and the last in Dublin, that this low neighbourhood suffered less from the epidemic than more elevated and salubrious localities. The fact was attributed to the existence of the vitriol works, and the chemical properties that manufactory distributed through the escape of its fumes and smoke over the neighbourhood. The existence of the vitriol works was for years looked upon as a nuisance to the Spring Garden district, and the Ballybough Bridge and Richmond neighbourhood. Several attempts were made, and petitions got up to stop the manufacture. It was asserted that it totally destroyed the value of the property out and about, and prevented any improvement from being ever attempted. Our Dublin readers (and who of them does not know the neighbourhood of Mud Island) can judge of this matter themselves, while we pass on.

For many years between the Canal-bridge and Ballybough-bridge, on the left-hand side, but few houses existed save that row called Sackville-gardens and Edward-terrace, with Love-lane at its base; but within the last decade numerous neat cottages have been erected along the roadway and upon the market-garden fields there. From Love-lane to Jones's-road, nearly, a long high dead stone wall ran formerly, but this has disappeared twenty years ago. A great portion of other fields within this enclosure was worked as sand pits, but now between the former places mentioned the ground is reclaimed from being sandholes and swamps, and is under tillage and market-gardening purposes.

In the days of the "old Charlies," when sentry-boxes stood at convenient angles and courtways, and when every man carried his life in his "fists," Mud Island was a rare spot, and, bless the mark, it had its king like regal Dalkey, and its sheriff, and poet laureate, and its roving court, and its true and tried and sworn retainers,—a jolly "tag-rag-and-bobtail."

Yea, the "King of Mud Island" was a right royal and puissant "monarch of all he surveyed," but we shall not further affirm that "his right there was none to dispute." There were many who did dispute his privileges, but he did not care three pewter *raps* for any of them; he bid them all a scornful defiance. M'Donnell was this king's name, but he sometimes traded under the Celtic alias of M'Gowan, because his majesty was always in difficulties, and as he was kindly hearted he thought it better to bamboozle his creditors than brain them. His majesty the king, in his private capacity of a citizen, was the proprietor of a number of sand-pits, the owner of a number of mud cabins, and the employer of a large number of workmen, who often worked for the love of the thing, thinking, no doubt, that it was better for them to go home occasionally without their wages than cease to be employed under the government. The King of Mud Island was not the first sovereign in the history of the world who became a bankrupt, and, like other kings, he knew how to wipe out his debts whenever it suited him, and commence *de novo*.

To get a jaunt in one of the king's sand carts was esteemed a joy by the juveniles of Mud Island, and often when young we have enjoyed the luxury of a drive with one of the drivers over Ballybough-bridge "to give the beast the water." Happy days these. Many stratagems were adopted by the creditors of the king to arrest him, but they signally failed from the fidelity of his retainers and from his own bold nerve and daring manner. The military, too, were enlisted more than once to assist in surrounding the supposed quarters of his majesty, but the monarch, from the fidelity of his friends, always got timely notice, and when the scouring party came the great M'Donnell was *non est inventus*. We remember on one occasion a couple of bailiffs catching a hold of one of the king's carters, who was a little the worse for drink; the man had some dispute with his royal master, and he was heard to say he did not care if the "old curse was nabbed," as he was tired of his service. The two city bailiffs, thinking this was a favourable opportunity, offered a bribe to the carter to tell them the whereabouts of their quarry. The carter seemingly acquiesced, and bid the bailiffs to jump up into the cart, and as soon as he "watered the beast" in the river at Ballybough he would drive them to the hiding-place of the king. The bailiffs but too gladly assented. After having a drop of the "native" to wet their whistle, Paddy Houlahan drove "the limbs of the law" over Ballybough. There was a full tide in the river, the Tolka being partly a tidal stream. As soon as Paddy got his horse and cart opposite the central arch of the bridge, with the water nearly up to the tail board, he jumps suddenly out on the shafts of the cart, pulled the trap-stick, and shot the two bailiffs headlong into the surges of the swollen river, exclaiming, with a loud ha! ha! "you will find the king down there, but you must swim for him." Lashing the horse like fury, he drove back to the true quarters of the king to acquaint him with his exploit. It is needless to say there was a reconciliation, a feast, and a bonefire that night in "Mud Island." Although the king did not always behave the best to his men, they never could be prevailed upon to act the "informer." His majesty had some boon companions during the earlier part of his reign, who were as renowned in their own way as himself. Among these was the famous Bryan Maguire, of the princely house of Fermanagh. Bryan was a character; he poked his nose into every city and court and camp in Europe. He enlisted or bought commissions in the English army several times, but from his duelling propensities he was forced to leave it. He would offend a brother officer for the purpose of having a challenge, and so certain was he, and sure of aim, that he never missed a shot. He winged or killed all he ever fought with. In the English army alone no small number of officers were sent into another world by his fatal shot. "Watty Cox," too, in his old days was acquainted with the king, but as the king had no royal exchequer at his back, and as Watty had ceased to publish his famous magazine at this time, the journalist could not advocate the cause of the king. Davy Ball was another companion of the monarch, and a sheriff namesake who kept a "tap," where the king's carters used to "get their morning."

Oh! spirit of Zozimus, Owney Morris, "Kildare Jack," "Stoney Pockets," and "Dandyorum," why have ye departed? Why has not the bard of Ballybough celebrated your glories in the idylls of the king? There are some verses floating through our memory in which some local rhymester several years ago celebrated the memories of Mud Island—what we remember we give. One of the verses ran thus:—

> "Isle of Ireland's brightest stars,
> Of broken skulls and bodily scars;
> Where "Sunday men" might walk apace
> Whilst bailiffs dare not show their face;
> Where wakes and weddings entertained
> The "boys" that bells and "bulkies" brained;
> Where doors of knocks and names were reft,
> And "numbers" changed from right to left;
> Where bonfires blazed and boasters bragged
> Of crimes that might have got them "*lagged;*"
> But woe to "stag" or "peeler" who
> Would attempt to lie perdue:
> If seized, the "Mudlarks" all would flock
> To martyr him on Ballybough;
> Or perhaps with all intents
> A plunge bath o'er the battlements."

Mud Island at one time was famous for fighting worthies, and gave a good few stout wrestlers to the turf. Langan, the once noted pugilist, was said to be born to this locality. Langan had a heavy battle, from sunrise to sundown, with another Mud Islander named Norman. Langan's latter years were spent in Liverpool, where he was the landlord of a noted tavern, much frequented by sporting men, and patronized by a large body of his own countrymen. He was often heard to boast in Liverpool, in his own smoke room, when amid a "select circle" of Irishmen, of his early days in Mud Island, a place, he said, "where, in the memory of the oldest man, a bailiff dare not show his face even in the way of friendship." Anent the death and burial of Langan there was much bickering and discussion among his friends in Dublin in 1846. To quiet some of his Irish admirers in this city, his remains were sent over to Dublin for the purpose of being interred in Glasnevin. A *weighted* coffin came, and the dead pugilist "lay in state" in a certain noted tavern in Britain-street for a short while. A grave suspicion, however, existed that a successful *ruse* was carried out, and many openly asserted that Langan's remains never left England.

Mud Island of to-day is, however, a changed place, and much improved for the better. The sanguinary rows that used to take place there formerly, even in our own memory, have long ceased; no detachment of soldiers have now to proceed from the Castle Yard at the instance of a Major Sirr to accompany a bailiff and enable him to serve his writ with safety. "Notices to quit" may be served now without running the risk of a coroner's inquest, and the successors of the "bulkies" or "Charlies" may walk unmolested through the narrow lanes of the Mud Isle. Civilization is there, though sanitary perfection is yet distant, notwithstanding that lamps have of late years appeared to throw a light upon the subject, and the Postmaster-General "forgets to remember" the classic name by which Spring Garden was formerly known.

[The subject is not exhausted in the above, and at an early date we may furnish our readers with further Memorials of Mud Island.]

THE "ROYAL" HISTORICAL AND ARCHÆOLOGICAL ASSOCIATION OF IRELAND.

The second general meeting of this body was held at Butler House, Kilkenny, on the 6th of April last,

The Rev. J. H. Martin, LL.D.,
in the chair.

The following were elected:—As Fellows—W. H. Lynn, Esq., F.R.I.B.A., Belfast; Rev. T. James, F.S.A., Huddersfield; Geo. Langtry, Esq., Belfast. Rev. G. H. Reade was admitted a Fellow *honoris causa*, in consequence of his zealous and successful exertions towards procuring the Queen's Letter for the Association. (Under 2nd General Rule) Earl of Courtown; Rev. S. Malone, R.C.C.; R. Malcomson; R. S. Longworth Dames; A. G. 'Geoghegan; R. L. Whitty; A. Fitzgibbon; N. Carolan.

As Members — His Imperial Highness Prince Lucien Bonaparte; Rev. Henry Octavius Coxe, Librarian of the Bodleian Library, Oxford; H. W. Acland, Esq., F.R.S.; H. E. Stokes, Esq., Madras; R. Given, Esq., Coleraine; A. Stevens, Esq., Waterford; Rev. E. Murphy, R.C.C., Kenmare; John O'Loughlen, Esq., London; Rev. T. S. Cole, Kinsale; J. Hansard, Esq., Dungarvan; G. Carr, Esq., New Ross; F. Nolan, Esq., Dublin; S. K. Mulholland, Esq., Hillsborough; John Long, Esq., Limerick.

The auditors having brought up the treasurer's account for year 1868, showing a balance of £420 3s. 7d. in favour of the association, the Rev. James Graves said that the account for the year 1869 would show the large balance of the previous year considerably diminished. The reason of having had so much in 1868 was that there had been an arrear in the printing of the "Journal"; a good deal had been since expended in the printing to bring up that arrear. One part of the "Journal" for 1867 yet remained to be issued; and it might save him correspondence with those seeking explanations on the matter, if he stated now that the cause of the delay was in consequence of the editor having to wait for Mr. Lenihan to complete his transcript of that very curious and most interesting document—Dr. Arthur's "Fee-book." Mr. Lenihan, having been ill, and being besides oppressed with business, had been unable to finish the transcript as speedily as was desirable; but he hoped that very soon this gap in the old series of the "Journal" would be filled up. Of the new series, commencing with 1870, the first number would be issued in a few days; but it would leave one, which ought to come before it, still to be issued—namely, the October part of the Journal for 1869. This part was in press; there had been considerable delay at their printer's, but the fellows and members would find that they were amply compensated for it by the value of the contents. The Messrs. M. and A. Fitzgibbon were contributing, at their own expense, some most curious and important documents illustrative of the history of the Desmond Geraldines, and of their own family, which was a branch of that house; and they had gone to a good deal of expense in having the documents transcribed, and procuring illustrative engravings. The necessity of being careful in the printing and collation of documents of this kind was also a cause of delay; but all, as he said, would be amply atoned for by the value and importance of the matter, for which the association should thank the Messrs. Fitzgibbon.

The receipt of numerous books, pamphlets, reports, &c., was acknowledged, and thanks voted for same. Amongst the books presented was "a sketch-book, bearing date 1791, containing drawings of several ancient buildings in Ireland as they appeared at that period: presented by Henry Lover, Esq., Barrister-at-Law. Mr. Lover suggested how desirable it would be if the Government would, at stated periods, have pictorial records made of the gradual changes which time works in these national monuments, which, were the funds provided, would be a work easy of accomplishment, now that photography is so available. All the members present fully coincided in the importance of this suggestion, but sad experience of the apathy of Government on the subject of our National Antiquities caused them to feel how little likelihood there was of any such measure being undertaken at the public expense.

Mr. Prim observed that the first sketch represented a portion of old Kilkenny Castle—the south-west tower—as it appeared at the time. There was a very interesting sketch of Clonmel Church, before the serious alterations made at its 're-edification;' and a view of Dunbrody Abbey, with the splendid great western window quite complete. There were very numerous drawings, including much architectural detail, made at Holy Cross Abbey, and the Rock of Cashel. The fort of Passage, County Waterford, a circular structure since nearly erased, is here depicted quite perfect; as also the Castle of Thurles, a fine keep, enclosed by a bawn with three large circular flankers. There were interesting sketches of Ardfinnan and Moykarky Castles; and a view of the old Church and Castle of Clonmanty, County of Kilkenny, showed very little change to have taken place in the appearance of those two last structures during the past eighty years."

Amongst the articles presented were:—an impression of an ancient ecclesiastical seal, bearing the legend, *Pauli O'Duain, Capellani*—the seal of Paul O'Dvain, Chaplain; a bronze mould for casting spoons, found two years since in removing an old clay fence near Kilmanagh.

The papers contributed were:—"Memoirs of Gabriel Beranger, and his Labours in the Cause of Irish Art, Literature, and Antiquities, from 1760 to 1780," by Sir W. R. Wilde, V.P.R.I.A.; and "Sir Edmund Butler, of the Dullogh, Knight," by the Rev. James Hughes.

The above two papers occupy nearly the entire of the April part of the "Journal" just issued; and to each are appended the words "to be continued."

NEW CROSS FOR THE ROCK OF CASHEL.

Messrs. Earley and Powells, of the Camden-street Works, have just completed a fine piece of art-work. It consists of a large cross to be erected on "The O'Scolaidhe Monument, St. Patrick's Rock, Cashel," and stands about 26 ft. in height above inscription stone on monument. The cross, with its shaft and pedestal, is of Portland stone, specially selected from the quarries. The shaft at its base is 2 ft. 8 in. by 2 ft., diminishing upwards to 2 ft. by 1 ft. 8 in. under the arms, the extreme width of which is 7 ft. This short notice must suffice for the present. We shall hereafter fully describe the monument and the new Cross when the latter has been erected on its intended site on the "Rock." We may mention that Messrs. Earley and Powells have kindly thrown open their yard in Grantham-street to the public for a few days. We would recommend a visit.

THE LIGHT AND AIR QUESTION.

Messrs. John Robb and Co., drapers, Castle-place, Belfast, have entered an action against Mr. James Connor, contractor, for, as they allege, erecting a warehouse in the adjoining street, the rere wall of which house partially deprives them of light through a small window in their premises about fifty feet distant.

THE RAILWAY IN JAPAN.

According to the *Japan Mail* of the 21st of May, the railway works were in rapid progress. The section between Yeddo and Yokohama had been commenced at both ends simiultaneously, the land in the capital chosen for the site of the station was being cleared and levelled, and all possible facilities were afforded to Mr. Morel in prosecuting the undertaking. The line crosses] the Tokaido (the grand road of the Empire) twice—once at Kangawa, and once just below the British Legation at Yeddo; and it will be constructed on a 3ft. 6in. guage, as approved by the consulting engineers at home, whose opinions upon the subject were requested.

SCIENCE IN ARCHITECTURE.*

An architect's specification is a good illustration of what constitutes science in architecture. In this paper I purpose dealing with some of the points that the carrying out of a specification suggests.

FOUNDATIONS, DRAINS, AND BRICKWORK.

The best foundation, as a general rule, is growing sand, and the least number of settlements are usually observed to buildings upon this foundation. Rock, known to be solid, is equally good, but rock is often treacherous, such, for instance, as may be found about Litherland. Most of the houses in Litherland Park are upon rock, and they have given seriously. Faults in the rock, holes, loose strata, or soft stone underneath may give, and if the rock does give, from any cause, the building receives a shock resulting in the usual defects of serious settlements. Growing sand will not give in this way; it has often a tendency to expand rather than to sink, and if it gives it does so but little, and that evenly, and does not hurt the structure upon it.

For the same reasons that make rock doubtful as a foundation, clay is more so: there may be, though hidden, what is technically termed ravines or other holes in the clay; these cause the structure to slip. If a solid bed can be assured, the architect may determine upon building without fear, but this is often impracticable. A thin bed of clay with rock underneath is a very treacherous foundation; the clay is almost sure to move, and should therefore be excavated. Cracks in buildings do not always arise from settlements in the foundations or defective work. All buildings have a tendency to settle and contract as the materials with which they have been built become dry. Brickwork, for instance, must contract and settle to some extent, and stone put into a building fresh from the quarry is more or less wet, and will shrink in some degree while drying. This accounts for the open joints sometimes visible in new buildings; these cannot be altogether avoided; better that this appearance, which can easily be set right, should exist, than the stone be made so tight that it will snap when contraction begins, and the materials dry. We require cills and steps to be bedded hollow for this reason, to provide for the results of contraction.

DRAINAGE.

Drains, where there is not much fall, are best of brick or of unglazed tiles; the idea that glazing improves drain tiles for all purposes is not correct. It was at first thought that the invention would cause the soil to pass easily through, but, instead of that, experience proves that in flat drainage the soil clings to the glazing far more tenaciously than to the unglazed material. It may be accounted for in this way: the glazing keeps the sides of the drain pipes very dry; they are so impervious that water cannot be communicated from the outside; and the soil will cling to the dry article while it will fall from the wet one, or be easily removed by a slight flushing of the pipe. Unglazed pipes are generally wet when in use, because moisture from the outside earth soaks into them, and the moist surface thus presented to the soil keeps the whole in a favourable state for the removal of the soil when a slight flushing takes place. Brick drains are for the same reason much better than glazed stoneware. I have known 6-in. drain tiles taken up in the neighbourhood of Liverpool, after having been laid but a year or two, and soil 2 in. thick has been clinging to the sides all round, fast, like mortar, leaving but 2 in. for water and other drainage to flow through; such pipes must evidently soon become choked up. This instance occurred where the ground was flat. Brick or unglazed pipes should be used in such cases. Where there is a good fall glazed pipes may be used, as they are more durable. Within the last few years we have known drains laid about Liverpool of 18-in. glazed pipes where there has not been much fall, and where the drains have often run 18 ft. below the ground level; these, it seems to me, are liable soon to choke from the cause named, and then how are they to be cleaned? Flushing will not take the soil off; it clings so fast to the smooth surface that forcible pressure is necessary, and at such a depth it is not safe for men to go down 18-in. pipes. A good brick drain would cost very little more, and would answer better in every way. In such rocky ground as is to be found about Liverpool a cheaper drain than the glazed pipe might often be obtained by cutting an opening in the rock and covering it with flags, and this would answer every purpose.

If drains are laid in running sand, it is better to set them in cement, then cover the joints with clay, as the sand will otherwise find its way into the drains before the cement is dry and choke the pipes; by covering this cement with clay, the latter, which will not at once let the water soak through, becomes a covering to the cement long enough to let it harden, and though the clay will in time be washed away, it will then have done its work.

In ordinary foundations, as generally understood, clay only is the best bedding for drains; there is no fear of the earth or growing sand getting into the pipes, and the clay allows them to yield to a pressure which might break them if set in cement. Of course, the danger of the pipes breaking, in case of an uneven pressure, when they are set with cement in running sand, still remains; but this is the less evil of the two, and must be borne.

MORTAR.

Mortar is better old than quite new; it is a mistake to specify,—"only new mortar is to be used." It is with mortar as with clay for bricks, if clay is used for bricks after having been tempered but a short time, the result is apparent in inferior bricks; they are brittle, and will not stand fire or weather; but if the clay is allowed to lie a long time it consolidates, works together, bonds, and makes tougher and more durable bricks: so if mortar is used while fresh, it is brittle, technically—short, the particles do not bind; but if allowed to stand for some days, the particles work well into one another, the whole becomes tough and clammy,—a great essential. When we try mortar, as architects, we like to feel it tough and clammy; but we cannot obtain this so well if we require it fresh. The difference between modern and ancient usage may account for our modern mortar not being so good as that of the ancients. Our mortar is now, as a rule, used fresh; in olden times it was frequently buried for twelve months before using. Mortar, though not used fresh, should be protected, according to the weather, and be kept moist; it is injured if allowed to become so dry as to require remixing.

It seems to me a belief is current that mill-made mortar is necessarily better than hand-made. I cannot agree with this notion. We were told last meeting that in the building of concrete houses fine sand separates from the cement, does not bind, and that coarser material is better. We all know this to be the case with cement work, hence we specify gravel; for the same reason, sand in mortar will not bind so well with the lime if ground fine in a mill, but is better for being coarse, while the bonding of the separate ingredients accomplished by the mill is, in hand-made mortar, better secured by capillary attraction when allowed to lie unused for a few days. The ancients, or Mediæval builders, it is evident, did not use any mortar to correspond with our mill-made; if old buildings are examined, it will be found large particles of the ingredients still exist in the mortar, showing material very much like gravel has been mixed with the lime. Another reason why mill-made mortar does not in practice prove so good as hand-made is, the men at the pug-mill will, however they are cautioned, throw in soft broken bricks and other refuse to grind up with the sand; and this refuse will not adhere so well to the lime as sharp sand or gravel. If men merely screen the sand for mortar, they cannot adopt this practice. Mortar for pointing is now sometimes buried from force of circumstances. If too much is made the builder buries it, and never finds it worse for such treatment. Mortar for pointing should not have much burnt marble in it, as the burning of the marble destroys its nature. Ground refuse from glass-works is now very frequently used for pointing, and with great success.

SMOKY CHIMNEYS.

It would be out of place here to attempt to deal with this evil in detail. I will simply allude to one principle only, apart from defective building, and the numerous inventions as remedies. It will invariably be found that chimneys have a tendency to smoke when at the side of a house where no building the same height adjoins. The space at the side of the house being sheltered forms a vacuum, and in doing so it rushes down the chimneys at that end of the house. This explains why such chimneys smoke during particular winds only. They do not smoke when the wind blows directly against them, but when it comes from an opposite quarter passing over the roof of the house. This, of course, suggests the necessity of making special preparations for all chimneys in such positions. A good curve to the flue will often prove sufficient. Chimneys smoke worse in Gothic houses, because the vacuums created are more numerous. In flat-roofed houses, if the chimneys are in the middle of the roof, there is not much fear of their smoking.

MASONRY.

The frequent failures in the use of Bath stone in and near Liverpool,—the utter want, as it has appeared to me, of its adaptability to our clime,—have often attracted my attention, and I have tried to find out the reason why a stone of such pleasing appearance, and so useful in working, could not be more generally used by us. When in Bath, a short time ago, I had an opportunity of paying attention to the subject. I soon came to the conclusion that the cause of failures in the use of this stone in Liverpool exists mainly in applying to the wrong quarries for stone for outside purposes.

If we require a good stone for outside purposes, we should specify "Box Ground," or the "Combe Down" stone. These are the most durable; they work freely, and the former is considered equal to Portland stone in durability, while much cheaper. The Combe Down stone was used in the building of Bath Abbey; nearly 300 years have elapsed since this abbey was restored, and yet many of the mouldings are still perfect. The Combe Down stone is not equal, on the whole, to the Box Ground; for outside purposes it requires to be selected, but when selected, gives great satisfaction; the blocks are not so large as those of the Box Ground; its texture is hard and coarse.

The Box Ground is coarser and harder than any of the Bath stones, and while most sorts will go to pieces in frosty weather, this will stand the hardest frost. It may be safely used for any external work, plinths, copings, or weatherings. Laying Bath stone on its proper bed has a great deal to do with its lasting well. This may always be determined by the thin black veins which run up the bed; they never run in the bed; and in some of the stone there are hard black veins termed lists or ribs; these always run in the bed and never across. The Box Ground stone can be obtained in lengths of 12 ft. 6 in., or 14 ft. 6 in.; the blocks vary in size from 4 ft. to 120 ft. cube.

The Corsham Down stone is the best to specify for inside purposes. It has a beautiful warm colour, and looks more effective than any other; while the other stones alluded to are very coarse, this is, on the contrary, of very fine texture, but durable and strong. It is free and easy to work, as, indeed, are all the Bath stones. It absorbs a great deal of water, and so hard in frost requires to be covered up, as it would burst if left exposed. It is the most regular in quality of all, and considered the best of our English stones for internal work. Patches of dark blue or slate-colour are sometimes found. These portions work in with the rest for ornamental effects in chimney-pieces, &c. The stone is sounder where these patches exist.

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* By Mr. Wm. Parslow. Read at meeting of the Liverpool Architectural Society.

Another sort is the Farleigh Down stone, the principal feature of which is, that the quarry contains two beds, the red bed and the white bed. This stone does not stand the weather well. It is more easily worked than any of the others; but the appearance is not so pleasing as the Corsham; it dries out often in red patches, giving an appearance termed foxy. It is in great demand in the neighbourhood where quarried, because of its price and easy working, but has no advantages to offer for Liverpool.

MARBLE.

With reference to this material for lavatories, wall-linings, chimney-pieces, &c., it is surprising at first to observe the difference in prices of articles from different works. Chimney-pieces, &c., sent over here direct from Belgium are, as a rule, much cheaper than those that can be bought from marble works of any standing in England; but the difference, as it appears to me, arises mainly from the less amount of labour bestowed upon the polishing. I have frequently known cases where chimney-pieces brought direct from Belgium have had to be polished again within two years, and the expense of this second polishing necessarily makes the article in the end very costly. Although I do not know the exact method of polishing adopted by the Belgians, it seems evident that they depend more upon a quick dry polish and chemical processes than the slow-laboured style of our English marble masons. The English plan is to grind and form the surface of the marble by means of wet friction, which is much slower than dry, and does not injure the marble, while dry rubbing does, by making it softer. This process is repeated with three or four different stones in order, and then the surface is glossed with lead and felt. This genuine English plan is superseded in some marble works, and doubtless in Belgium, by dry rubbing, a quick process, but one destroying the hard surface of the stone. The glossing operation is then performed, not by rubbing with lead and felt, but by pouring on the marble some such chemical as spirit of salt. This is so strong, that when passed upon the marble it produces a hissing sound, and must necessarily soften the surface. It then receives a slight rubbing, which soon occasions a polish; but this may be detected from the genuine English polish by a peculiar deadness. In course of a few years this polish disappears, and requires reviving. The true polish lasts for a generation, with ordinary care.

This chemical wash, but without the dry rubbing, is the English mode for polishing carved work; the ordinary rubbing would destroy the spirit of carved marble-work: it is therefore simply tooled, or, at other times, sanded, and then washed with spirit of salt: the consequence is, all English carved marble-work has rather a dead look, but this is not objectionable. It soils in the course of a year or two, but may be restored by a washing of American potash or chloride of lime. The Italian marbles, as they are called, most generally used in England are the black and gold, the dove, Bardilla (which is like black and gold, but inferior); also the statuary, the vein, and the Sicilian. Lately the Irish marbles have been freely used in Enngland. There are four sorts, red, green, black, and the fossil, a dark colour. Of the Belgian marbles, the St. Aune's must be classed among the best. The Belgian black is a very inferior article, and not equal to our common Derby black. All marbles are more or less rotten, that is, they are composed of so many parts that they have a tendency to come to pieces. The more beautifully they are marked, the more rotten they are. The various marks show the junctures or formations in the marble that produce this quality. For this reason, marble, if intended to be worked as a pillar, and to bear a weight, must be carefully erected; if out of the perpendicular, and supporting much weight, it is liable to snap at some of these formations. The black and gold marble, though one of the most beautiful, is one of the most rotten, and when polished is exceedingly susceptible to scratches and snips. The Italian dove and the Belgian St. Anne's are the most durable dark marbles. The Italian statuary, though a very beautiful marble, is soft. The vein and Sicilian are more durable, and will consequently resist dust better. The Irish marbles are equal to the Italian in quality; they are rather less expensive, on account of the cheapness of Irish labour.

Inferior marbles may be told by blotches and other faults, and by being soft they will not bear a fine angle. In less than a month after working inferior light-coloured marble-work will look black at the corners, which blackness cannot be wiped off. In good hard marble-work any such soiling will wipe off. Dark-coloured marbles are very rarely soft.

(To be continued.)

MONUMENT IN GLASNEVIN CEMETERY.

The contract for the erection of the monument to the late Matthew Cassidy, Esq., (an illustration of which is given with our present number) has been taken by Messrs. Fitzpatrick and Molloy, Glasnevin. It will be executed in limestone from Tullamore quarries, having the shafts of columns in dark serpentine and red Aberdeen granite, polished. The four panels for inscriptions will be of white marble, and the circular panels filled in with bulbs of polished spars of divers colours. The railing and cross, of wrought iron richly decorated, will be executed by the firm of Messrs. Fagan and Son, Great Brunswick-street. The entire will be carried out under the direction of the architect, Mr. Charles Geoghegan.

THE DUNDALK AND GREENORE RAILWAY, AND PACKET STATION.

The works on this line have, we are happy to say, made considerable progress since our last notice of them in this journal. On Wednesday, the 6th inst., a general inspection of them, so far, was made by a number of gentlemen interested in railway projects, besides many professionals. Early in the morning of the day above named the fine steamer, *The Duchess of Sutherland*, belonging to the London and North-Western Railway Company, steamed from Holyhead to Greenore Point, and landed a large party, amongst whom were:—Sir Francis Moon, chairman London and North-Western Railway; the Earl of Erne, Sir Hardman Earle, Admiral Schomberg, Mr. Bickerstitt, Mr. M'Mechan, Mr. Friel, Mr. Cawkwell, general manager London and North-Western Railway; Mr. Baker, engineer-in-chief; Mr. Skipworth, manager of the company's business in Ireland, and Captain Dent. The visitors were met by Mr. R. A. Minnitt, director Irish North-Western Railway; Mr. James Barton, C.E., engineer-in-chief to the works, and to the Carlingford Lough Commission; Mr. Henry Plews, manager Irish North-Western Railway; Mr. R. Hickson, resident engineer to the Carlingford Lough Commission; Mr. E. Manisty, C.E.; Mr. H. Foxall, C.E.; and by Messrs. Connor and Olley, the contractors. The works in connection with the construction of the quayage at Greenore were first inspected. The Point, hitherto only a place of resort for parties of pleasure, presented an animated scene of busy labour on the occasion. A great quay wall is to extend some 900 feet, and have deep water always in front of it, in some places a depth of 17 feet at low water. Behind this wall a marine railway station has been designed and contracted for. Extensive arrangements have been made for the accommodation of a large passenger and goods traffic. Passengers will be enabled to step from the decks of the steamers to the railway platform, and *vicé versâ*, and goods can be lifted to and from the wagons of the railway to the steamer's deck. The party having carefully examined the various works at Greenore, entered a number of vehicles, and inspected every portion of the line in detail. The course of the railway being comparatively flat there are no extensive cuttings; but some fine stone bridges of three and five arches excited much commendation. An iron lattice bridge, in course of construction by the Messrs. Grendon, Drogheda, over the Ballymascanlon River, within about three miles of Dundalk, was found to be in a forward condition. At Dundalk a splendid iron viaduct has been thrown across the river, of 22 spans, each span measuring 40 feet; the entire length of the viaduct, including abutments, being about 1,000 feet. This fine structure was only completed on Monday last, at a cost of about £10,000. An opportunity was taken of the arrival of the inspecting party to test the capability of the viaduct to bear the pressure of the heaviest strain. For this purpose three locomotives and their tenders, with an immense train of carriages and wagons were got together, and at first driven slowly backwards and forwards over its entire length. Then the train was driven, and a pause took place over each archway, and finally the entire train was driven rapidly backwards and forwards over the structure for some time. The result was considered satisfactory, the main deflection being only 1-16th, although the weight on each span must have been over 100 tons. The viaduct has been erected in an almost incredibly short space of time, by the Messrs. Grendon, Drogheda Iron Works, and it is highly creditable to the enterprise and capacity of that firm. The two lines of rails branching off from the bridge—one, for the accommodation of the shipping, running at the water's edge; the other extending to the junction with the Irish North-Western line—and the new station in Quay-street, having undergone inspection, the entire party, amounting in all to about 50 persons, adjourned to the chief offices of the Irish North-Western Railway, where they partook of a sumptuous *dejeuner*.

The English portion of the inspecting party left by the 4.20 p.m. train for Newry, *en route* for Greenore, where they embarked same evening on their return voyage to Holyhead. The contractors, Messrs. Connor and Olley, were highly complimented on the vigour and promptitude with which the works were being prosecuted, and the utmost satisfaction expressed at the manner in which this great undertaking is being carried out.

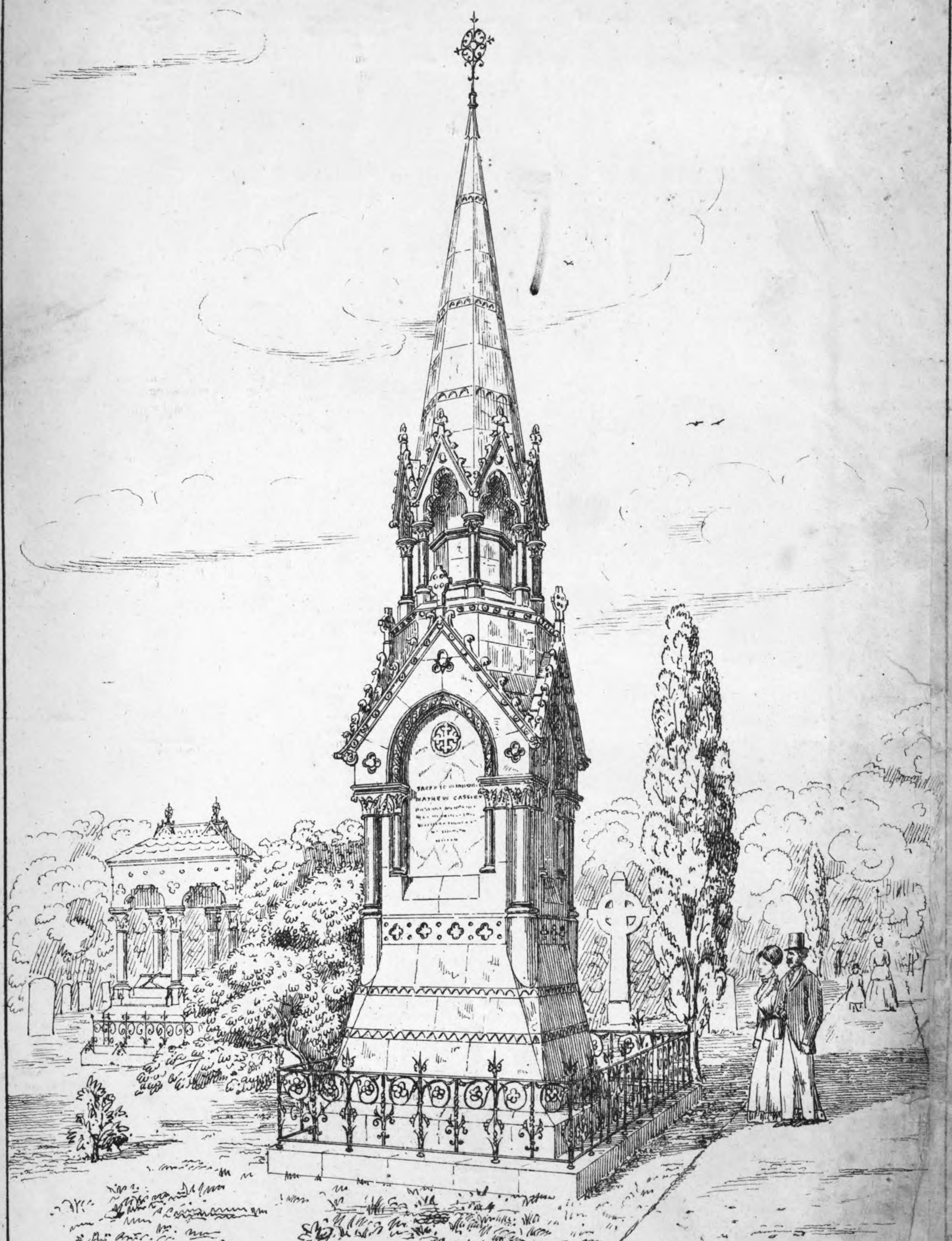
It is expected that the railway will be completed, and ready for traffic, early in May next. The extensive works at the quay wall, railway station, and hotel will occupy somewhere about three years to finish.

Tourists to Warrenpoint, Rostrevor, and vicinity this summer would, we feel assured, be gratified, as well as interested, by a day's run to this—hitherto almost deserted, but now—busy scene of labour. We speak from our own experience whilst noting the inspection above described.

THE AMERICAN ISTHMUS.

Now that the Suez Canal is an accomplished fact, and the United States Government are encouraging a survey for a canal across the mountainous Isthmus of America, there may be some advantage in recalling to memory the labours of a party who, a little more than forty years ago, carried a series of levellings from Panama to Chagres,—in other words from sea to sea.

In 1827, Mr. J. A. Lloyd was specially commissioned by General Bolivar to ascertain the best line for a communication, either



MONUMENT. TO. BE. ERECTED. IN. GLASNEVIN. CEMETERY.

CHAS GEOGHEGAN ARCHT

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railway or canal, across the Isthmus. In company with a Swedish officer in the Colombian service, he commenced operations in May, 1828, and being greatly in earnest, carried them on all through the rainy season. Trustworthy instruments were used, all the observations were made with extreme care, so as to avoid the necessity for a subsequent verification, and in addition the relative height of the ocean on each side of the Isthmus was determined.

A popular notion prevails that the Cordillera of the Andes stretches unbroken throughout the whole length of the Isthmus. But this is not the case, for in the province of Veragua there are breaks in the chain, leaving bold and rugged detached mountains, which are succeeded by conical hills from 300 to 500 feet in height, scattered among savannahs and plains. It was on the line of road, stretching from Panama towards these gaps in the hills, that Mr. Lloyd began his survey, and carried it inland nearly twenty-three miles till he struck the river Chagres at a spot 169·84 feet above the level of high water at Panama. The greatest height crossed on the way was 633·32 feet.

In 1829 the survey was resumed and continued down the course of the river to Cruces, which was found to be not more than 37·96 feet above the Pacific. On this Mr. Lloyd remarks: "Having nearly fifty miles more to descend, and finding so great a fall in nineteen miles, we were led to expect a greater fall than 37·96 feet in the remaining distance: and consequently at this stage in our operations to apprehend that we should find the level of the sea at Panama to be higher than at the mouth of the Chagres."

This apprehension was confirmed, for on arriving at La Bruja, twelve miles on the seaport on the Atlantic, a difference of 13·55 feet was discovered. High water takes place at nearly the same hour on each side of the Isthmus, and the Atlantic is lower than the Pacific by the amount here stated. Variations occur at different hours, the effect of which appears to be that in every twelve hours, and commencing with high tide, the level of the Pacific is first several feet higher than that of the Atlantic; then it becomes of the same height, and at low tide is several feet lower. Again, as the tide rises the two seas are of one height, and finally at high tide the Pacific is again the same number of feet above the Atlantic as at first.

The port of Chagres is so exceedingly difficult and dangerous to approach, that Mr. Lloyd recommended that the adjacent bay of Limon (or Navy Bay), which is quite safe, should be selected for a port, from which a canal three miles in length would connect with the river Chagres three miles above its outfall. He then proposed to navigate the river to its junction with the Rio Trinidad and to construct thence a railway to Panama. The length of his survey, following the windings of the streams, was eighty-two miles; but in a direct line that distance might be shortened one-half; and there are places on the Pacific much nearer to the bay of Limon than Panama is. Hence it may be concluded that the difficulties in the way of constructing a canal or a railway, or both, would be less on this route than on the routes surveyed where the Isthmus is wider.

A generally accurate idea of the country may be formed from a statement in which Mr. Lloyd remarks that almost every person who visits Panama from the Atlantic side, is disposed to think that the country rises from the Atlantic to the Pacific. The ascent of the Chagres, particularly when the river is swollen by rains, is very toilsome; and on reaching Cruces, after a four or five days' tedious journey, a traveller fancies he has gained a considerable elevation above the sea he has left behind. The impression thus made is strengthened as he advances, through rough and rugged passes, ascending and descending, until on arriving in the savannahs he sees Panama with its conspicuous cathedral, and imagines it to be on a considerable elevation above the sea. The city is built actually on a low flat shore; but the valley from which it was first seen being several feet below the level of the sea favours the contrary impression.

Mr. Lloyd's account of his levellings, illustrated by maps, plans, and sections, was published in the *Philosophical Transactions* for 1830, having been communicated to the Royal Society by Capt. (now General Sir Edward) Sabine, who was then secretary of the Society. To the present generation it offers the charm of novelty.—*Athenæum*

PORTRAITS OF DANIEL O'CONNELL.

Amongst the proceedings at a recent meeting of the Dublin Municipal Council we find the following reported:—

Mr. Norwood stated that in November, 1847, (!!) a committee was appointed for the purpose of having a portrait of Daniel O'Connell made for the City Hall at a cost of £150. *The members of that committee are now dead*, and a report from Committee No. 3 stated that they wished to have the matter referred back to themselves. It appeared that at the time the matter was referred to a committee, the National Bank had an excellent portrait of O'Connell, but they would not sell it to the Corporation. However, they consented to lend it, as a copy, to any Irish artist appointed by the Corporation to paint the portrait. Mr. A. M. Sullivan now moved and Alderman P. P. M'Swiney seconded the confirmation of the report, that the subject be referred to Committee No. 3 to have the portrait executed.

In reference to a picture of the "Liberator" proposed to be placed in the Council Chamber, Waterford, the local *Citizen* has the following:—

It is now over thirteen months since a local civic dignitary commenced collecting subscriptions for a grand painting of Daniel O'Connell to adorn the walls of the Council Chamber. We were told that such a painting would be not only ornamental but useful, for "lives of great men remind us," &c.—and subscriptions freely poured in. The citizens were given to understand that in three months they would have the pleasure of gazing upon the portrait of the "Liberator," and they waited patiently and cheerfully, but thrice three months have elapsed without the long-promised picture being forthcoming. The artist can have no object in delay, yet the picture, like Penelope's web, seems never likely to be finished, and the patience of the subscribers is nearly exhausted, seeing that after thirteen months of expectation they are still left "without money or marbles." It is high time that they should get some definite information as to *when the job is likely to be completed.*

SALARIES OF COUNTY SURVEYORS' ASSISTANTS.

The County Surveyor of Louth presented his annual report to the Grand Jury on their assembling at the summer assizes now being holden at Dundalk. We would beg to call special attention to the *second* paragraph, in which Mr. Neville appeals for "the full salary allowed by law" to county surveyors' assistants. We have invariably advocated the cause of these ill-paid "Civil Servants," and we would again take the opportunity of expressing a hope that all the Grand Juries throughout Ireland will consider their case *without delay.* The "full" salary is, we believe, £80; surely an increase of £20 would not be too much to seek for, when arduous and incessant duties are required to be performed by the "assistants" in *every* county. In the one to which the report refers, many particulars have come to our knowledge, from which we have inferred that these gentlemen are expected to undergo an amount of slavery which could hardly be credited, and this in too many instances for a *miserable yearly salary of* £60!

Hear now what Mr. John Neville, C.E., says in his report to the Grand Jury:—

"Gentlemen,—In the year 1860 there were 517m. 2f. 6p. of roads maintained through the county, at a cost of £9,714 8s.; in the past year there were 590m. 2f. 36p. maintained at a cost of £8,987 12s. 9d., which shews an increase of 73m. 6f. 30p., with an annual decrease of £726 15s. 3d. in the cost of maintenance, a result in every way satisfactory, but which has been obtained gradually, although subject to those fluctuations more and less in the intermediate years, which it is hopeless to eliminate from a system of contracts based on competition, and therefore dependent to some extent on the will and judgment of the contractors.

"One of my assistants, Mr. P. J. Dodd, having been appointed by the Government to another office,[*] will cease to act when I can satisfactorily fill his place. There are *forty-four applications* for the office, and I hope to be able to select the *most suitable candidate.* A glance at the county expenditure in the works department will show that the whole expenditure of superintendence is small, compared with what can be saved by integrity and skill, and as I am endeavouring to raise the standard of the assistants' qualifications, I would ask that *the full salary allowed by law shall be allocated by the Grand Jury for any assistants* who shall now and hereafter be appointed in this county.

"There is a very general feeling amongst the cesspayers at road-sessions in favour of making the greater number of road-contracts to begin from Summer Assizes, as the farmers are better enabled to pay this levy after the ensuing harvest; while on the other side the road contractors struggle for spring contracts, as the levy is available to make them payments immediately after Summer Assizes, before there is much expenditure; while on the summer contracts the whole or much the greater portion of the work must be completed during the winter, before they can receive payment after the Spring Assizes. I am still of opinion that the views of both parties could be met by making advances out of the surplus funds that cannot be paid until the Assizes after the expiration of the contract year."

[In our "Correspondence" column will be found a letter from the Vice-President of the Assistant County Surveyors' Association in reply to "Argus" in a recent number.]

HONOUR TO AN IRISH-AMERICAN SCULPTOR.

We extract with pleasure from the St. Louis *Times* the annexed interesting account of the presentation to a prominent lady of that city of a bust of her husband, executed by one of our well-known sculptors, James Wilson MacDonald. The lady is the wife of Mr. James H. Lucas, who is the Astor of St. Louis, and a man of marked individuality of character. The presentation ceremony was attended by a large number of citizens of St. Louis, including the mayor, who presided on the occasion, and introduced Mr. J. H. O'Neill as the spokesman in behalf of the gentleman who made the gift. He alluded to the eventful career of Mr. Lucas, his liberality, and his private worth, and said:—

As the *name* of James H. Lucas will be preserved as long as the history of St. Louis shall remain, and its landmarks be remembered, so it has been thought proper that his *lineaments* should be perpetuated in marble. James Wilson MacDonald, whose genius as a sculptor is widely known, and whose fame is increasing with every effort of his chisel, was selected as the artist to make the bust of Mr. Lucas. The result is before you. A statue, however expressive, which bears little or no resemblance to the physical man, is a failure as a work of art. And on the other hand, to be a success, it is not enough that the statue should be an exact likeness of the physical man. It is proper that the resemblance, in this respect, should be as near as practicable. But the expression of the intellect, the soul, the character of the man, should appear in the marble. In other words, the man should *live* in the marble. The marble should do everything except move and speak articulately. This is success. I think the artist in this case has not failed. The bust is its own silent eulogist. Michael Angelo, while looking on the St. Mark of Donatello at Florence, said, "Marco, perche non mi parli!" This was the highest praise that one artist could bestow upon another. I think that one might almost be excused if, forgetting the absence of Mr. Lucas in the presence of this likeness, he should address the marble in a similar manner, "Lucas, why don't you speak to me?"

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[*] Inspector of the Boyne Navigation.

Judge Prim responded in behalf of Mrs. Lucas, and paid equally high compliments to the sculptor's skill.

A NEW TURKISH BATH AT BLARNEY, CO. CORK.

A NEW Turkish Bath was opened on Wednesday at St. Ann's Hill, Blarney, The new building is situate upon a terrace below the main building, and for style of architecture and beauty excels anything of the kind ever seen in this country. The baths occupy a space of 180 feet by 36 feet, and consist of two complete sets, one for ladies, and the other for gentlemen. The structure is divided transversely, a cupola surmounting the building upon the outside, at the point of division. The entire building has an exceedingly classical and imposing effect externally and internally, and is built in a substantial and permanent manner. The division walls of the sanatorium have piers of Caen stone carved, and styles panelled in red Cork marble, the capping of the top rails being polished Sicilian marble. The flooring throughout is laid in red marble, also giving a beautiful effect to the building. Upon the gentlemen's side of the structure the wall dividing the hot room from the cooling chamber is broken by a circular-headed aperture 12 feet by 6 feet filled with a single sheet of plate glass. These noble rooms are decorated in the highest style of architectural ornamentation. Much use has been made of mirrors and stained glass in the construction of the building, which, combined with the rich tapestry, gives it internally quite an Oriental appearance. In the centre of the cooling room a marble fountain plays into a plunge-bath of large dimensions. Special arrangements have been made in the hot room for its illumination by gas, the chief features of which are the maintenance of the purity of the internal atmosphere, the products of the combination of the gas-lights passing directly into the external air from the hot rooms by oblong circular-headed stained glass panels. The architectural beauties of this magnificent establishment are due to Mr. R. Barter.

THE CITY DRAINAGE.

A SPECIAL meeting of the Corporation was held on Friday last, for the purpose of forwarding the plan proposed for regulating the city sewage and purifying the river Liffey. It was pleasing to find that on the occasion there was an attendance of two-thirds of the members of the Council to take part in the final settlement of a question of such paramount importance to the health of our citizens. The following resolutions were passed:—

1. "That a special committee be now appointed and delegated pursuant to the 4th section of the 29th and 30th Vic., cap. 90, as the Dublin Main Drainage Committee, to carry out the requisite works for the purification of the Liffey, by intercepting sewers, and they are hereby directed and authorised to have the necessary plans prepared, and contracts asked for, with all reasonable despatch, reporting progress monthly to this house; and that, pending final arrangements for the outfall and other works as a whole, the committee take steps at once to commence the northern low-level intercepting sewer so soon as the places for its construction as a part of the whole may be determined on, and ask for tenders for contracts for executing the same; and that the following, &c., be named as a special committee, to be called the Dublin Main Drainage Committee; and they are directed to communicate with the Lords Justices and the Government, and to take such other steps as they may deem fit, and to report from time to time to this Council; and that the above committee be attended by the Town Clerk, the committee not to enter into any contracts for the said works save by the direct and special authority in that case received from the Council in public meeting assembled; this resolution not in any way to interfere with the powers delegated to, vested in, and exercised by the Public Health Committee by resolution of the Council of the 22nd August and 12th September, 1866."

2. "Whereas, it is deemed necessary for promoting the health and convenience of the inhabitants of the city of Dublin and its vicinity that the system of intercepting sewers, according to the plans of Messrs. Neville and Bazalgette, should be constructed and carried into operation and effect, and whereas the lands required for that purpose cannot be obtained, and the works necessary therefor cannot be undertaken or executed in an efficient manner without the authority of Parliament: Now, notice is hereby given that at a special meeting, convened and held to-day, pursuant to the provisions of the statute, the Corporation will cause or authorise application to be made to Parliament for an act to enable the Corporation to take lands and easements, and to execute all such work as may be requisite for such purpose. and that the expenses thereof shall be paid out of the rates authorized to be levied for the same purpose; and, accordingly, that Mr. John Smith, the law agent of the Corporation, be ordered and directed to take all necessary steps, on behalf of the Corporation, for the promotion of a bill in the next session of Parliament, enabling the Corporation to take such lands and easements to execute such works; and that the Town Clerk do affix his name to whatever advertisements or notices may be deemed necessary in relation to such bill or proceeding."

PLUNGING FIRE.

AN extremely satisfactory result, so far as the Navy are concerned, was lately obtained at Shoeburyness. A target representing a portion of the deck of an iron-clad ship, protected by 1-inch iron plates, was fired at by the 9-inch muzzle-loading rifle gun, the projectile being Palliser shell, the charge the full-battering one of 43lb., and the distance 100 yards. The target was so arranged that the projectile struck at an angle of about 8 degrees from the horizontal, so as to represent the angle of incidence of a shot fired direct at about 2,000 yards, or that of a projectile fired at 100 yards from a higher level; such, for instance, as that of the *Monarch's* battery as compared with the *Captain's*. It was found that at this angle the projectile did not enter the ship, but, after ploughing up the woodwork of the deck, ricochetted off it and went away screaming and whistling up into the air until lost from sight. One of the disadvantages urged against a low freeboard is thus disposed of as far as the 9-inch guns are concerned. The *Monarch*, however, is armed with 12-inch guns, and it would be interesting to ascertain whether the above results would hold good in the case of the larger calibre. It seems desirable also to ascertain the actual angle at which a projectile fired horizontally will penetrate a ship's deck protected with as much iron as is admissible in its construction. Ships' decks may often be subjected to a plunging fire from elevated batteries, such as those on Straddon Heights or Gibraltar.—*Globe.*

WIDE TENDERING.

IT is proposed, in consequence of an accumulation of filth at George's-quay, Dundalk (consequent on the formation of the railway embankment), to construct a main sewer from end of present town sewer to deep water. The following were the tenders sent in to the Commissioners:—Connor and Olley, £750; John Duffy, £570; Patrick Henry, £539; John Jackson, £468!

Mr. John Neville, C.E., informed the Commissioners that he had stated in the specification that *no extras would be allowed*, and the contractor should include all in his tender.

Mr. Kelly asked had Mr. Jackson named his sureties?

Mr. Neville said the best security was the money which would remain in the hands of the Board; and he would take care that a sufficient sum should remain in hands to secure themselves.

The Board accepted Mr. Jackson's tender conditionally, Mr. Jackson not being in attendance.

Mr. Neville said he would require permission to employ a mason to look over the work.

Mr. Callan—Not till the work commences.

Mr. Neville—I will not want him till the work commences.

Mr. Kelly—I think we should not commence till we ascertain if the Greenore Railway Company will pay us the £200 promised by Mr. Barton.

The suggestion was agreed to.

CORRESPONDENCE.

[*It is to be distinctly understood that although we give place to letters of correspondents, we do not subscribe* editorially *to the opinions or statements set forth in same.*]

SALARIES OF DEPUTY COUNTY SURVEYORS.

TO THE EDITOR OF THE IRISH BUILDER.

SIR,—I regret to say that, not being a subscriber to your valuable paper, I did not until yesterday see the letter of "Argus", in your issue of the 1st ult., or I should have striven to give him the desired information before now. However, I am happy to inform him, on behalf of the office bearers of the Assistant County Surveyors' Association (Ireland), that we have not "lost hope," nor "has the cold shoulder or shrug *á la française* been given" to what he rightly calls "this laudable and very commendable association." The claims which the association puts forward for increase of salary and superannuation are so fair, equitable, and just, and the reasons and grounds so forcible and plain, that it requires but a little patience and perseverance in bringing them before the British Legislature, which has now arrived at such a point as to be by no means indifferent to any reasonable complaints put forward by the humblest subjects of the British Crown, and give them that deliberate consideration towards arriving at such a conclusion as will ensure the prosperity of the State, and the happiness of the people, to have them satisfactorily rightified.

In answer to the question, What has been done since the meeting at the Verdon Hotel, Dublin, in September last? I am sorry to say that, like nearly every other project in society, no matter with what energy it may be driven forward, the results have not fully realized the anticipations. Unforeseen and uncalculated interruptions had to be encountered, and, owing to the fact that assistant surveyors are so widely scattered, and consequently so hard to be communicated with, it is no easy matter when an interruption arises to have it put to rights. One great hindrance came across our path through the resignation of the office of deputy surveyor, and consequent resignation of secretaryship, by Mr. Conway Scott, Belfast. This was a very hard blow to the association, and greatly retarded its progress, inasmuch as it was chiefly through his energy and exertions it sprung into existence. But scarcely had the association got over the shock of Mr. Scott's loss, and his successor heartily got into the business, than he, too, gave up county pursuits, and of course lost that personal interest in the association's affairs which he otherwise would have had. But, besides and above all this, Government have had their hands so full during the present session that, even had nothing occurred to mar our prosperity or interrupt our progress, we could not possibly have got the matter brought before parliament.

And yet the committee have been anything but idle, nor is it to be supposed they have in the slightest degree "lost hope"—far from it,—for during the past year minute enquiries have been made into every particular in connection with the state and position of every assistant in Ireland, and the answers (uncontradictable facts) have been such as will prove in justice an invincible weapon against every opponent who may rise up to object to the claims of increase of salary and superannuation of county surveyors' assistants. There is at present a pamphlet in course of preparation, in which public opinion will be directed to glaring anomalies in the treatment of assistant surveyors. This pamphlet will be circulated in such a way as the committee shall think most advantageous, when they see a fit opportunity for doing so. In the mean time "Argus" and other members may rest assured that no labour or pains shall be spared by the committee to urge forward the objects which the association has in view.

W. J. ROBINSON,
Vice-President, Assistant County Surveyors' Association (Ireland).

Gortin, Co. Tyrone,
2nd July, 1870.

THE PROPER DRAINAGE OF TOWNS.*

As uncleanliness of houses and streets, and the emission of noxious gases into the atmosphere thereof, are productive of disease and mortality, in proportion to the intensity of the uncleanliness and the noxiousness of the gases, so whatever is done to prevent or reduce uncleanliness, and the escape of foul gases into the air, tends to maintain the air in a pure state, and to prevent or reduce disease and mortality. This applies as well to ventilation as to drainage.

From the earliest times a wrong system has been pursued in regard to the drainage of our cities and towns; and, consequent upon our desire to remedy the evil handed down to us through our forefathers' ignorance of sanitary science, we have been endeavouring, during the last twenty years, to improve the drainage of the metropolis, as well as of towns throughout the country. But, unfortunately, by following too much in the old groove, the so-called improvements that have been effected are at best but confused and inefficient works.

All experience proves that the only true principle upon which cities and towns can be drained so as to preserve the subsoil, the atmosphere, and the natural streams from pollution, is that the rainfall should be kept separate from the sewage, and discharged into the rivers, and that the sewage should be kept separate from the rainfall, and used at a distance in the country for fertilising the land.

This principle, which the writer enunciated twenty-one years ago as the only true one to be adopted for town drainage, is fast fructifying. Persons who then denied its cogency now see that the old drainage works, as well as the drainage works which have recently been executed, are inefficient; that they are palliatives, and do not prevent the pollution of the subsoil, the air, and the streams; that, in fact, it is as great an error to admit filthy drainage into the drains and sewers that discharge surface water into the streams and rivers, as it was to retain excreta and liquid refuse in cesspools and cesspool-sewers at the back and front of the houses.

The difference between the noxiousness of an uncovered sewer and of one that is covered is only in degree. Both pollute the atmosphere by the gases which escape from the decomposing deposit and sewage currents, the one directly from the exposed surface, the other from the unexposed surface by the openings in the communicating drains. Each house and each street has its respective inlets; and through very many of these streams of foul gases are continually escaping into and polluting the stratum of air respired by the inhabitants. It is a fact that not only the filth that deposits in the drains and sewers, but the sewage itself while running in them gives off offensive emanations. These, by escaping through the inlets into the houses and streets, do not produce specific disease, if they cannot fail to aggravate or intensify disease, or at least to lower the general tone of health.

Next, therefore, to open sewers and cesspools, the existing system of sewerage is the most effectual that could be devised for distributing the noxious sewage gases among the people. It may be likened to an enormous cullender which, while the liquid is passing down, the vapour beneath is passing up, and escaping into the air by the regurgitation. It is true that many of the inlets to the drains in the houses, and some in the streets, are trapped; but a vast number are not trapped, and through these, as well as through very many that are supposed to be trapped, the drains and the sewers are ventilated by currents of air constantly passing into, along, and out of them; that is, the pernicious gases generated in the drains and sewers are being continually forced out by the greater pressure of the cooler and heavier external air acting on the lesser pressure of the warmer and lighter internal air. . . . . .

The idea of washing the street-refuse down the sewers looks well in theory, but would be very wrong in practice—first, because much of the heavy matters would deposit and cake on the sewer bottoms, making them wide and flat if they were not so already, which flushing without raking would not remove; and second, because the sewage currents, with the heavy matters carried by them into the reservoirs and the river, would not only pollute the river, but deposit on its sides and bed as well. All this is now in operation, except that the streets are not cleansed by the standpipe and hose. If they were so cleansed, they would keep so only until the traffic commenced, and would remain wet, not only for hours each day, but, when the atmosphere was very humid for days together, which would be very objectionable. What now really takes place is this: the streets are let alone from two to six days and more at a time, when, if they are dry, the refuse is swept, and, if they are wet, the mud is scraped into heaps, and afterwards carted away. Practically, the streets are not cleansed until they become strewed, or entirely covered, with dirt or slop, when it is swept into heaps, and carted away. This is the normal condition of the main streets of traffic. This system of waiting for the dirt or slop to accumulate before it is swept up and removed, is like the old practice of waiting for the sewage to deposit in the sewers until it choked the house-drains.

During the intervals of cleansing, in fine weather, clouds of triturated granite and horse-droppings are wafted into the houses, smothering everything, and into the eyes and mouths of the wayfarers, blinding and choking them; and in wet weather, sheets of greasy mud cover the streets, which the traffic scatters over the pavement, rendering walking on them, owing to the greasiness of the mud, a kind of retrograde progression; and over the passengers, covering their clothes, hands, and faces. When it rains heavily, rills of slimy liquid meander from the water-sheds of the roads and footways into the gutters, whence the currents, gathering strength, sweep the sand and other matters down the gullies into the sewers and river, causing the mischief as before described. As this now takes place, the evil would be far greater, if the street refuse were to be washed every morning down the sewers as proposed.

The true use of sewers is to drain the surface of the rain falling upon it, and the land or sub-soil of the rain-water percolating into it. The surface-water from the roofs, areas, and yards of the houses, and from the streets and roads, could be made, by carefully scavenging (not the slow, slovenly way in which it is now intermittently performed), to flow off comparatively clean. Local boards and vestries should constantly employ men and boys, or the able-bodied poor, to sweep up and remove the dirt and mud as produced by the traffic, and the offensive matters as dropped by the horses. Receptacles should also be made near the gullies for intercepting the detritus when it rains, instead of allowing it to be carried into the sewers, and thence by the reservoirs, into the river. The receptacles should be cleansed out at least every other day—not once a week, once a fortnight, once a month, or not at all, as now obtains. . . . As by this system little or no dirt would be allowed to remain in the streets, so would there be but very little slop in wet weather, and but little dust in dry weather; and therefore fewer slop and water-carts would be required. . . . . .

The sewage of cities and towns should be collected and carried away, so that the noxious gases generated by it should be discharged above the stratum of the atmosphere in which the people live and breathe. This could be done by laying down a system of main piping along the back or front of the houses separate from the surface water-sewers, with branch pipes laid to the kitchen and scullery sinks and the water-closets in the houses, separate from the surface water-drains. As these main and branch pipes would never be quite full of sewage, the space unoccupied by the sewage would be occupied by the gases emanating from the sewage. Hence, to prevent the effluvium from escaping into the houses, all the inlets should be provided with syphon pipes under them; and ventilating pipes, unconnected with the rain-pipes, should be continued from the sewage-pipes above the house-tops, and as far from the attic windows as possible, or connected with special ventilating shafts carried high in the air.

In the metropolis it would be neither difficult nor expensive to lay down a separate system of sewage mains with branch pipes as proposed, as very many of the former could be laid along the existing sewers, and most of the latter into the houses by going just under the basement flooring, as the sewage-sinks and the water-closets are generally above the floor level.

Such a state of cleanliness of surface, and purity of air and of streams, would follow from the full adoption of the separate system, as are unknown and attainable by the combined system. The only argument yet offered in favour of the latter method of drainage as against the former is, that while the latter requires only one set of drains and sewers, the former would require two sets, which would double the expense. A system, therefore, that poisons the air and the natural streams, is to be preferred, because it is cheap, to a system that would keep the air and the streams pure and sweet because it is dear. But it is not a fact that the separate system would cost much more than the other. In no fair argument based on reason and science, can the combined system be defended.

A HINT TO IRON SHIPBUILDERS.

IN a paper read before the Polytechnic Club of the American Institute, by Mr. Norman Weard, entitled, "The Ship of the Future: Shall it be Wood or Iron." After enumerating all the bad qualities of iron ships, and all the good ones of wooden ones, he says:—"If it were the fact that the ship of the future is to be of iron, there would be left us but one course to pursue, in order to regain the ocean ship-building and steam carrying trade of the great Atlantic, namely, war—a war with England. We can never hope to excel or even equal England in building large and swift ocean mail steamers of iron. I am not here, however, as the advocate of a war with England; for I do not believe that the ship of the future is to be made of iron. I prefer to take the weather-guage of the English shipbuilders, by assisting to discover how to make a better ship of the material we have in like excess to the English supply of iron—to take the wind out of their sails, as our yachtsmen did the other day. And this I propose to do, by inquiring into the bad qualities of the ships they produce, and by investigation in advance to find out how to produce a better ship than they can make without coming to us, or applying to some foreign country for the material."

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* Extracted from paper in *Builder*, by Mr. J. Phillips.

LAW.

COURT OF QUEEN'S BENCH.

(Before the Lord Chief Justice and a Special Jury.)

Hemans v. *the Waterford and Central Ireland Railway Company.*—This was an action brought by Mr. George Willoughby Hemans, Civil Engineer, Westminster Chambers, London, to recover from defendants a sum of £3,531 16s., money alleged to be payable by them to plaintiff for the work performed by him as engineer, for professional fees, and for materials provided by him at defendants' request. The plaintiff's services consisted in making surveys, preparing Parliamentary surveys, and attending both Houses of Parliament in connexion with the passing of the Central Ireland Railways Act, in the year 1866. Defendants denied that plaintiff performed the work mentioned in the summons and plaint at their request, and also that he paid away money for them as alleged. It appeared that the Central Ireland Railway was promoted in 1866 by the Waterford and Kilkenny and the Kilkenny Junction Railway Companies, of both of which Mr. Delahunty, M.P., was a leading director. The act authorising the construction of the line received the Royal assent in July, 1866. The plaintiff's case was that he had been retained professionally to make the surveys, and prepare the plans, &c., for the railway, by Mr. Delahunty and Mr. Ratcliffe, solicitor, acting on behalf of the promoting companies, a proportion of whose directors, with others appointed by independent shareholders, was to form the board of the Central Ireland Railway—a line running from Maryborough to Mullingar. It was provided by a clause in the act that the costs and expenses of promoting the act were to be borne by the two promoting companies. Mr. Hemans' claim was at the rate of £100 per mile on the length of the line—nearly 36 miles—and out of the amount sued for it was stated that £200 had been received. It is alleged that the land for the line from Maryborough to Mullingar has not yet been purchased, nor any steps taken for carrying out the project beyond the surveys and plans. Plaintiff gave evidence of the retainer to perform the work, and that the charge of £100 per mile for the Parliamentary work, such as that done in this case, was the usual charge, though in some special cases mentioned £75, and even £50 per mile only have been charged. The defence was substantially that, at most, the defendants could only be made liable for a moiety of the sum claimed, and that for even that moiety they were not liable on the alleged retainer.

The jury found for the plaintiff at the rate of £50 per mile, with interest.

NOTES OF WORKS.

An eligible site, presenting 100 ft. frontage by 200 ft. in depth has been taken by Mr. Patrick Boland at the north end of South Great George's-street, for an extensive new bakery, with dwelling house, flour and coal stores, stabling, &c., attached. The foundations are in progress. Mr. Chas. Geoghegan is the architect.

A new branch of the Royal Bank is about to be opened in Kingstown, in a central position in George's-street, facing Northumberland-avenue. The plans are in preparation by Mr. Charles Geoghegan, architect to the bank.

MISCELLANEOUS.

Water Supply for Holywood, Co. Down.—We understand that the following gentlemen have sent in plans for the formation of a new reservoir at Holywood:—James Kendall, engineer, Holywood; H. Brett, Dublin; W. Leonard Dublin; F. Louch, Belfast and Dublin; J. Henry, assistant surveyor, Hillsborough; C. Scott, Belfast: J. Mackinnion, Belfast.

At the meeting of the Clare Grand Jury, on the 9th inst., Mr. Patrick Breen tendered his resignation of the office of County Surveyor's Assistant which was accepted. For the last 36 years Mr. Breen held this important position, and his retirement is owing to his advanced age, and consequent inability to perform the *arduous* and *multitudinous* duties of his office. The appointment has been bestowed on his son, Mr. P. J. Breen, C.E. The Salary is £80 per annum.

A Petroleum Locomotive.—Travellers in France, who have a horror of petroleum and dread a repetition of the Abergele accident, may possibly not be aware that they may happen to find themselves not only in the same train with their dreaded enemy, but actually being drawn at the rate of fifty miles an hour by its means. M. Dieudonné recently exhibited the model of a small engine heated by means of petroleum. This locomotive carries 2000 litres of oil in the tender, a hand-pump forcing the oil into a smaller reservoir near the boiler. The process of lighting the oil is said to be neither difficult nor dangerous, owing to the oil being kept in compartments, a small quantity only being lighted at one time, then another division, and so on till the whole furnace is alight. This engine consumes its own smoke perfectly; it is said to be extremely easy to drive, the driving apparatus being very simple. A larger locomotive with some small improvements has since been built, and has actually drawn ordinary trains on the railway between Epernay, Rheims, and Bar-le-Duc. It drew a train of fourteen carriages with ease, and has already travelled over 2000 kilometres (about 1250 miles) without accident. The consumption of oil was 85 per cent. less by weight than that of good patent compressed coal; one kilogramme—a little more than 2 lbs.—of oil produced 12 kilogrammes (25 lbs.) of steam.

Chicago has a new church—the First Congregational,—which has just been finished at a cost of 180,000 dollars. A peculiarity of this church is, that the reading-desk or pulpit is provided with a copper speaking-trumpet, which is connected with eleven pews, where, with rubber hose and cup attached, the deaf may enjoy a sermon as well as those not so unfortunate.

In the monuments and tombs of ancient Egypt, in Memphis and Thebes, far back of any written records, are representations of butchers sharpening their knives on a round piece of metal, just as the butchers do at the present day. These representations are coloured blue, which in a later period is known to be the colour representing iron or steel, while red is made to represent bronze. The old Cushite Arabians, the earliest civilisers of mankind, used iron in pre-historic times. In the ancient Scandinavian tumuli in Denmark are found swords and knives with blades of gold, edged with iron; also blades of copper faced with iron, evidently showing that these tumuli are of very remote antiquity, when iron was one of the rarest and most precious metals.

Sinking Caisson for East River Bridge, New York.—The first step of progress in the actual building of the East River Bridge may be said to have been taken upon the occasion of the caisson, which goes to form the foundation for the stone pier of the bridge upon the Brooklyn side, being placed in position, and lowered into its final resting-place. The caisson was towed to Dock-street by steamers. Among those present were Messrs. Wm. C. Kingsley, superintendent of construction; Col. W. A. Roebling, engineer-in-chief; Horatio Allen, consulting engineer; C. C. Martin, assistant engineer; Col. Paine, assistant engineer and constructor; Dr. S. Rule, inspector; and T. C. Douglass, master mason. The work was done under the general supervision of Mr. Henry C. Murphy, president of the East River Bridge Company, and Mr. John A. Roebling, chief engineer of the same. The caisson is 170 ft. long, 102 ft. wide, and 18 ft. deep. The material of which it is made is yellow pine, filled in with concrete, one floor rising above the other. Its weight is 2,800 tons; and taking into consideration that over 8,000,500 ft. of oak and pine lumber were used in its construction, it may be very correctly described as a huge oblong mass of timber. Building operations will soon be commenced. There will be three gangs of 175 men each employed to go down the pipes. They will excavate within the caisson until it is by this process sunk from 30 ft. to 50 ft. deeper than at present.—*Builder*.

It is well known that workers in lead-factories are apt in course of time to suffer from lead poisoning: in fact, a constant series of patients proceed from the lead-factories to the hospitals of London. In France the evil effects of the mineral were usually prevented by giving the workpeople a drink containing dilute sulphuric acid, but it has now been discovered that regular potations of milk have an equally good effect.

The Turkish Imperial Printing-office.—The *Levant Herald* gives an interesting account of the progress of the Imperial Printing Office at Constantinople, for the improvement of which an imperial commission has just been appointed. It now employs sixteen steam presses. Besides the official gazette, the *Takvim Vakai* and other official new journals, the Salsmeh or Imperial almanack and numerous official papers, it prints many commentaries on the Koran and other religious works. It has lately published the Arab text of Abulfeda's 'History of the Caliphs,' and a summarized Turkish translation of a lately discovered Arabic MS., being a history of the Arabs to the taking of Constantinople by the Turks. The author of this work is called the Munejjeim Bashi, or chief astronomer. We may add that the office is engaged in printing a great number of school-books in Turkish and the other languages of the empire.

Chatham Dockyard Extension Works.—The Director of Works of the Navy has selected Harding's Flexible Roofing for covering the whole of the erections (order No. 611) on these works, owing to the satisfaction given by that supplied to the same yard about three years since. Samples &c., at 20 Nicholas-lane, London, E.C.

Mr. J. Wade, of Berkley-street, has exectuted a monument of neat and substantial proportions to be erected at Oughterard, County Galway. The material employed is native limestone, with panels in the four sides of Kilkenny and Italian marbles. It is 6 feet square at base, and is surmounted by a stone cross, the entire height being 16 feet. The cost is about £200.

BANKRUPTS.

John Hall, North-street, Belfast, druggist.

INSOLVENTS.

Andrew Weir, Hill-street, Newry, Co. Down, painter and builder

Daniel Duggan, Killarney, Co. Kerry, coachmaker and painter.

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The Irish Builder.

Vol. XII.—No. 255.

Architects.

SURELY it is high time that we should say a word in defence of architects, whom it is becoming the fashion to decry. A sad and barbarous generalization is now prevalent in the tone of the English Press, which, forgetting due discrimination and rational distinction, has taken up a hue-and-cry not only detrimental to the architectural profession, but scandalous in the face of civilization. In fact, the English Press is quite demented on the subject; and we can hardly say whether those who affect to defend and "apologise" for, or those who, tooth and nail, attack the architectural profession in general, on account of some flaw, or alleged flaw, that their pure eyes may have seen, even without spectacles, in some circumscribed sphere, do the most mischief. If we take a general glance at the very numerous works that have been erected within the last fifty years; if we consider the extraordinary advance and the astonishing improvement that has taken place in ecclesiastical, civil, and domestic architecture in spite of every drawback, whether on the part of the public or architects, we cannot reasonably resist the conclusion that the general advantage is unquestionable.

It is an amusing consideration that the "craze" which is just now having its day in detraction of the architect, affords an indubitable evidence that the sphere of the architect is no sinecure, and that his work is one that is more than ever indispensable at the present time. As to the former consideration, the architect knows too well that in works, great or small, the eyes of Argus and the hands of Briareus would not be too great an assistance, according to the expectations of employers and the public, in labours that are the very reverse of inarduous. That the work of the architect is in demand, clearly appears from the great amount of public criticism on buildings, and from the increasing attempts which are made to obtain the labours of the architect without acknowledgment, or with a derogatory recognition; for even the age itself witnesses on every hand that society, while availing itself of the speciality of the architect, at the same time, forsooth, affects to despise his speciality, tries to cheapen his work, or—still worse—to obtain his labour while ignoring his claims.

Let it be distinctly understood that we are simply defending the *bonâ fide* architect—the man who thoroughly understands and brings to bear art and science in the smallest and the largest work that passes through his hands. And although we well know that almost every day witnesses the *debût* of some one, who, not having any education in this special direction, and perhaps not even having before thought of the bold stroke, dubs himself "architect," who has neither right nor ability for the title, yet the test of art and science is enough. Show us a building in which these are not apparent and unmistakable, and it is certain architectural skill did not produce it. It is true that such a building may have been the production of an architect under pressure—we mean under almost peremptory orders to construct a botch; for they are a sort of people who deal with the architect as though he ought to and could make a square circle or a round triangle at their bidding. It is of course impossible, if even this absurdity were accomplished, to meet the views of those who entertain such notions; nay, they would then go back to their first ideas. The architect has to do his best with this sort of thing, and it is hardly to be expected that anything very satisfactory in respect to art, to the reputation of the architectural profession, or to the public will be the result.

In order to develop his art, it is thought that the architect necessarily tries to lead his employer into more expense than originally contemplated. We most confidently assert that such is a false and erroneous notion. One swallow does not make a summer; and if in some instances there be employers who suppose that they have been in such leading, how unjust it is to generalize, and scandalize the whole profession! We are disinclined, however, to suppose that even in exceptional cases where the employer has been led into greater expenditure than contemplated, it has been the result of the architect's schemes either artistically or financially. If there are complaints of this character, let us hear them. If a man supposes that he has been misled by an architect, surely if, instead of keeping his grievance or supposed grievance to himself, not choosing to place it reasonably before the public, he continues ever hereafter to draw odium upon the whole profession, his conduct is not only most cowardly, but affords a strong presumption that he, more than the architect, is to blame; and what other architects have to do with the case heaven knows. Yet there is hardly ever a case in which the employer of an architect thinks himself aggrieved but forthwith the whole class is assailed with vituperation.

Since the chief Government officer of public works has quarrelled with Mr. Barry, the newspapers have followed suit. Such episodes as this occur:—

> "*Dulwich College and Architectural Tyranny.*—An apparently enraged 'Old Inhabitant of Dulwich' has written a letter to the *South London Press*, under the above heading. The 'Old Inhabitant' thinks 'it is high time now for the governors of Dulwich College to consider their relations to Mr. Charles Barry.' The 'profligate expenditure' upon the Houses of Parliament is fortunately a matter of general notoriety, but it is not commonly known that here, at Dulwich, we can more than cap every instance of *architectural* audacity, and of that irrational and wasteful profusion in which 'family architects' delight."

This is strange. That Mr. Barry should, so soon after his dismissal by the First Commissioner himself, have become a "tyrant" certainly "more than caps" (to use this elegant figure) common belief. When a man is down, it seems to be the civilized fashion to give him an extra kick. At present the architectural profession is thought to be in disrepute, the officer of public works having blown upon it. Anon come the vultures, the crows, and the kites, who, if they find nothing to devour, are yet able to make a discordant noise. The Government having "considered its relation," and this old inhabitant of Dulwich thinking it to be "high time" for Dulwich College to consider *their* relation to Mr. Barry, and the public perchance seeming to think it to be in accordance with the spirit of the age to denounce the architectural profession, the relation is not indeed a pleasant one. A popular writer in the *Illustrated London News* (Mr. Shirley Brooks) says:—

> "This quarrel between architects and employers, I don't see it is *absolutely* set at rest by any argument which has yet been advanced. It is urged that an architect sells to his employer not only the skill that plans the house and the labour that watches over its erection, but *all* the means whereby the house has been conceived and executed. The somewhat ignoble reason is, that otherwise the house-owner cannot find out the courses of drains and chimneys. *Highly practical*, of course. But such treatment of architects may be expected in days when the architect is not regarded as an artist, but only as a somewhat more expensive builder. *Sundry Philistines*, indeed, think 'the builder's clever clerk quite as good as *any* architect, and don't understand Mr. Architrave giving himself such airs.'"

The italics in this quotation are our own. Supposing there to be a universal quarrel between architects and their employers (which there is not), *absolute* agreement between the one and the other is a sheer impossibility. The idea that the architect "sells to his employer *all* the means whereby the house has been conceived and executed," is simply a notion that the architect should sell himself body and soul to his employer, not only *pro tem.*, but "so long as ye both shall live." Marvellous notion! Mr. Brooks adds—"highly practical, of course." We say it is highly impractical. In whatever way the architect may be "regarded" by the "sundry Philistines" of or for whom Mr. Brooks speaks, it is perfectly clear that such compliments cannot possibly be reciprocated, whatever stipulations might be made. It is, however, consoling to the profession that it is only "*sundry Philistines*" that pay to it their kind regards. We know that the intelligent public both think and act more rationally. The craze is exceptional. "Such treatment of architects," says Mr. Brooks, "may be expected in days when the architect is not regarded as an artist, but only as a somewhat more expensive builder." Exceptional employers and exceptional "architects" exist. An *architect* is *always* a *less* expensive builder. There is nothing to prevent "the builder's clever clerk" becoming an architect. "Sundry Philistines," says Mr. Brooks, "think him as good as '*any* architect!'" Well, if these "sundry Philistines" think so, are architects to blame? Mr. Brooks proceeds to compare the architect who is "ordered to send home his plans, just as the shoemaker is ordered to send home the last he has cut for you," and he asks—"Why should an architect be more courteously treated than a shoemaker? The British architects seem to see a reason; but had better bow to the Philistines, and ask, 'Any orders this morning?'" The British architects have certainly not asked to be treated with any more courtesy than any other class of men. The man who treats his bootmaker discourteously is only a snob. "Better bow to the Philistines!" Who are these Philistines? We suspect—indeed it is clear—that they only afford a peg for Shirley Brooks to hang his lines upon. Because, forsooth, there has been a "quarrel" between Mr. Ayrton and Mr. Barry, it is argued there is a "quarrel" between architects and their employers the world over! This is the logic of the British Press just now. There is a raid against architects: the first victim is Mr. Barry, who, because he will not assent to a peremptory order from the Commissioner of Works to give up what belonged to his late father, is told to go to the right about. Mr. Barry happens to be the architect of *Dulwich College*. An "old inhabitant" (does any of Mr. Ayrton's family live at

Dulwich ?) is trying to influence the public against Mr. Barry, because the building does not please *his* eye. He says—

> "Let all the energy and intelligence of this neighbourhood be united to aid in the *great work* which lies before the Commission, and let the first demand be the removal of the deadly incubus of a permanent 'family architect.'"

We neither know nor care to know what is meant by a "family architect." This we well know, however, that there are "sundry Philistines," as Mr. Shirley Brooks would term them, whose parasitical notions lead them to suppose that, in consideration of once having employed an architect in erecting a building, they are entitled to his services then, henceforth, and for ever. This is an attempt on the part of the employer to make him a "family architect" in spite of himself. This is indeed a "deadly incubus." Talk of bowing to the "sundry Philistines" who adopt such dodges; why there is not an architect practising who would not be glad to be delivered from such family connexions, and to bow them at once from his office.

As to the question of the architect being ordered to "send home his plans" when the house is finished; why, it is certainly not an invariable rule with architects to keep them from his employer when the builder has done with them. It is much a matter of courtesy. Employers can make the stipulation. There is one stipulation, however, that ought in fairness to be made between employer and architect that would save much after trouble, viz., that when all preliminaries have been settled, and the design fixed upon, one-half the architect's charges should be then paid. At some stage before the contract is entered into, this is due both to the employer and the architect. When some such custom exists, we shall have a better understanding between the two, as well as a firmer status in the architectural profession. We are open to correction in this matter, and only suggest this because it is not well that a noble and honorable profession should be undervalued or misunderstood.

MEMORIALS OF "MUD ISLAND" AND ITS ENVIRONS.

Our article in the last issue of the Irish Builder on the above subject having attracted considerable notice, and having been copied largely into the newspapers, we return to the subject sooner than we intended. We have travelled not a little of the world ourselves, and wherever we roamed we found that the name of Mud Island had got the start of us. We have conversed with "tickets of leave" from Tasmania, missionaries from Mexico, and disbanded soldiers who spent a quarter of a century in the Indian army, and who returned home to the motherland with honours consisting of "a crack on the crown and a neat wooden leg"; each and all of them told us that the recollections of Mud Island formed often a matter of old gossip of bygone days among our countrymen in these remote places. Even to-day in New York, or in the streets of Toronto or Montreal, old Dubliners will be met with who will not fail to ask, "Musha, what way does poor old Mud Island look?" We may answer the interrogatory, though we have answered it already. Mud Island looks much improved, but her streets and lanes still want to be brushed up, and her architecture built up, for what is built up already, with slight exceptions, ought to be pulled down.

In treating of Mud Island and its reminiscences in our last we confined our notice to the district proper; a great deal, however, of the interest attaching to Mud Island hinges itself also to the localities of Ballybough, Phillipsburgh Strand and Avenue, "The Big Gun," and Richmond. Even the village of Drumcondra exchanged courtesies bland and stern betimes with its more "regal governed" neighbours on the south of the Tolka.

Ballybough Bridge was destroyed and rebuilt several times. John Le Decer, or Deer, who was mayor of Dublin at three different times in the fourteenth century, caused this bridge to be rebuilt once. He was a princely citizen of Dublin, and he gave several munificent gifts of money for the improvement of the city, and for the erection of fountains and the supply of water. In old times a causeway only existed on the site of this bridge. A portion of the old structure may be traced built into one of the arches of the present bridge, and on a slab some few years since an inscription was decipherable relating to the bridge. An estuary for many years existed opposite Phillipsburgh Strand road, which at low water was almost dry; and in consequence of being an open *sesame* for all sorts of rubbish and animal refuse, was an intolerable nuisance to the neighbourhood about. Several attempts were made to cure the evil; some were for reclaiming the swamp by filling up, others were for keeping within it a sheet of water by means of sluice-gates on the river wall and sea wall. Early in the present century a sort of winding circular brick sewer was constructed, stretching from the sea wall on Annesley Bridge Road across the swamp or estuary to Ballybough Bridge, and there connecting itself with the water of the Tolka. By this device it was blindly supposed that at the rise of the tide the water of the Tolka might find an outlet to the sea, and that by making good the river wall between the two bridges the complete reclamation of the estuary from tidal action would be accomplished. This, or something similar to it, seemed to be the notion entertained, but the river and the tide conspired to overthrow this little bit of engineering idiotcy, and succeeded accordingly. During these early days a church was begun to be built on this estuary, about the site of where the new houses have been recently erected. Before the foundations were accomplished the building came to grief, and the site was abandoned. A church or chapel might be built upon piles or upon a rock, but building one in an undrained swamp was no easy matter, particularly when money was not to be had.

This estuary or swamp is now, and has been for some time, in process of reclamation. It is being filled up and levelled with road stuff and other *débris*, and cabbages are now growing over the space where the juveniles of Mud Island and Ballybough fished for flounders and eels. This estuary might long since have been converted into a small park or pleasure gardens, instead of being allowed to continue a dismal swamp. It is possible that in another quarter of a century the site of the old estuary will be thickly covered with the habitations of man.

Opposite Ballybough Bridge a noted tavern stood: a portion of the house still exists; it was known as "Cockle Hall." A Jews' burial ground exists near hand to this, which is said to be one of the first in the country; it is reported by some to be contemporaneous with Cromwell. Where "Elrington House" and garden now stand a court stood, known as Johnston's Court. On farther is Factory Lane, called so from a factory having existed here many years ago for the manufacture, we believe, of some kind of cloth.

Mr. M. Reigh's wine and grocery establishment is a very old one, and dates back a long number of years. In the time of its original proprietor, the father of the present owner, it was a noted tavern. The building was quite different from the present construction. The house was right well patronised for a "good drop" in the days when the name of Father Mathew was unheard of. The house in old times was the rendezvous and meeting place of many of the "hard heads, hard fists, and hard drinkers." If anyone was missing from home, or created an uneasiness in the family circle by his late hours, the cry among the old stay-at-home crones and gossipers was, "I'll engage it's in Paddy Reigh's he is." And sure enough, ten chances to one but what the shrewd old crone said to the anxious wife was Gospel truth. "Paddy Reigh," as he was familiarly called by his customers, was a jovial but withal a sharp and shrewd business man; he saw a little of the world, profited by his experience, and laid the foundation of comfort for his successors.

In Phillipsburgh Avenue (called after a Mr. Phillips, the ground landlord) there lived once a few characters literary and otherwise. Among these was one Joseph Hamilton, of Annadale Cottage; he was the author of several poems, and a work entitled "An Essay upon Duelling." Hamilton was known as the "philanthropist." This man lost a good deal of money in his lifetime on disastrous and Utopian speculations, and during his latter days was never much removed from the reach of want. He was a contributor to some periodicals, and used to figure accordingly in the pages of the Dublin newspapers as a political prophet. He corresponded with many of the crowned heads of Europe, and took the credit of having foretold many political revolutions and changes that took place. His warnings to British statesmen and cabinets were mostly, if not always, disregarded, verifying the truism that a man is never accounted a prophet in his own coutry. Hamilton's exertions and labours to put down the foolish practice of duelling in Ireland were entitled to the thanks of the British public. Poor Joseph Hamilton, however, died in straitened circumstances, leaving two daughters to deplore his loss.

A rather eccentric character, known as Major or Captain Haggerty (by courtesy we believe), once lived in Phillipsburgh Avenue. The major sported a very large eye-glass and a heavy walking-stick. He had very peculiar ideas of things in particular and things in general, and he evidently did not believe in the natural adjustment of things. When walking along the pathway or road, if he espied a stone torn up by some accident from its place, he would stoop for it, take it up, and look for the hole from whence it was displaced; if succeeding in finding it, he would place it down in its original bed and stamp upon it with his heel; he would then retire for some feet, clap his eye-glass upon his eye, and look if it was "out of winding." If it did not appear to him to be a perfect fit or quite level he would again place his heel upon the cantankerous stone, wheel round on one leg, and repeat the eyeing and wheeling again and again until he was fully satisfied that his performance was perfect, and that the stone was firm in its place. The major formed a butt and a target for the juveniles and scamps of the neighbourhood, and they used to annoy the eccentric major by accosting him thus—" Major Haggerty, when will you give me the halfpenny you owe me. How the unlucky halfpenny came to be due by the major we could never rightly find out. One young rascal was heard to aver once that the major promised him that coin for some message he performed, but when the errand was accomplished the major refused to pay. Poor Haggerty, however, suffered a constant annoyance, for wherever and whenever the young scamps met him they would ask the old gentleman for the halfpenny he owed them. The major has crossed the bourne many years ago.

On the site of the present Catholic church a spot of ground or garden once existed called " the Commissary." It was a mystery to many why it was called so. From enquiries amongst the oldest inhabitants several years ago we found that on this spot, in 1798, the year of the Irish rebellion, there was an army commissariat, and that from this cause originated the name. A " lock-up " and police station existed on the site of Windsor Buildings beside Windsor Avenue, but the whole of this quarter, for several yards, east and west has been metamorphosed of late years. The " lock-up " and police station were two singular old thatched structures, with entrance porches in front and dormers rising from out the thatched roof. Fairview Avenue was always a respectable quarter, and the houses were occupied forty years ago with well-to-do and respectable tenants. At a corner house on the left as you enter this avenue lived a strange individual named " Harry Odlam." The neighbours were wont to say of Harry that he did not care for " God, man, or devil." They were not far astray, for Odlam cared more for the sale of soap and candles and the purchase of a cook's " kitchen stuff" than priests or parsons and their sermons. He could curse like a trooper, and when excitement ran low in the neighbourhood it became a proposition with the " boys " to call upon Harry and " draw him out." They were sure to be rewarded for their pains by a few " thundering curses." Old Harry was a well-read, intelligent old fellow, but he scoffed at all religion, and died as he lived. Further on, within a yard, for a number of years a Catholic chapel stood, known as " The Little Chapel ": the present structure on Fairview Strand replaced it. The "Big Gun" neighbourhood took its name from a public inn on whose sign-board was painted a piece of cannon.

Of Marino, the seat of the Earl of Charlemont, much might be written. The mansion was built in the last century by the earl who commanded the Irish volunteers. He was a good classic scholar, had an architectural taste, and was a lover and patron of the fine arts. He travelled much in Greece and Italy. He built the Casino in the lawn at Marino after classic models he saw abroad. Marino, fifty or sixty years ago, was a different place from what it is now. The gardens and shrubberies were then kept in beautiful order; there were nice walks, ornamental ponds, grotto work, etc. His son, who died a few years ago, still maintained the gardens and conservatories in good order, and the late earl gained many prizes at the floral and horticultural shows in Dublin.

Clontarf Crescent, or Marino Crescent as it is called, was built in the latter end of the last century by a rich but eccentric Quaker, to spite the old Earl of Charlemont and to hide his view of the sea. The houses between twenty-five and thirty years ago had got into a bad state of repair by neglect, and consequently had gone down in value. A new purchaser took them in hand, coated over their brick fronts with cement, and put them in decent order. A new road was made farther out at the same time, allowing for a longer garden frontage, and a waste field in front was converted into a small park or pleasure ground. After these improvements the houses in Marino Crescent went up in price, and the whole neighbourhood became much improved.

We have now got to our limits in the environs of Mud Island in this direction. We may remark, however, that we think it is not only possible but practical to reclaim the estuary between the line of the Drogheda Railway and the Fairview Strand and Clontarf Road. At low water the tide recedes altogether from the strand, leaving it quite naked and not very pleasing to the sight. At full tide it is somewhat certainly of a pleasure to look upon, but it is only a dissolving view.

The neighbourhood of Richmond and Drumcondra is rife in recollections, and noted personages have lived, loved, and lie buried in this quarter, while others have left the impress of their name and characters, which still hold intact. We will still require another ramble among these old storied haunts on the banks of the Tolka ere we can close our hurried sketch of the " Memorials Mud Island and its Environs."

SMOKE NUISANCE—SANITARY PROSECUTION.

At the Southern Divisional Police Court on Saturday, 23rd ult., Mr. Arthur Galwey, 22, Eustace-street, bookbinder, was summoned, at the instance of the Public Health Committee, for having caused a nuisance.

Mr. Edward A. Ennis appeared for the prosecution, and Mr. Dillon on behalf of Mrs. Star, who drew the attention of the authorities to the alleged nuisance. Mr. J. O. Byrne, instructed by Mr. Charles Fitzgerald, jun., appeared for defendant.

Mr. Boyle, C.E., deposed that at the request of Mrs. Star, who conducted a millinery establishment in the same street, and employed a large number of young women as dressmakers, he visited her premises to ascertain the extent of the nuisance she complained of. He found a number of dressmakers crowded together in one of the back rooms of Mrs. Star's house. The windows of the room were *all closed*, although the weather was very warm. When the windows were opened, the smoke and soot emitted from the chimney of defendant's establishment rushed into the apartment, so that it was advisable to keep the windows shut.

Mr. Ennis read a certificate from Dr. E. D. Mapother, Medical Officer of Health, to the effect that the construction of the chimney on defendant's premises caused the smoke coming from it to be a nuisance dangerous to public health in the locality.

In reply to the magistrates, Mr. Boyle said that Dr. Mapother believed the nuisance could be abated if the chimney were raised to the proper height. This alteration would cost about £15.

The defendant said that the case had been previously before Mr. Barton, and at the suggestion of Dr. Mapother the chimney had been raised three feet, and the smoke directed in a particular way by placing a top on the flue.

Mrs. Star was examined, and deposed that she had been carrying on business in Eustace-street for forty years, and had never experienced any nuisance until defendant commenced business in the locality. Since that time, however, her family and employés had suffered greatly from the effects of the smoke emitted from his premises.

At the request of the defendent, who said he wished to be advised as to the course he should adopt—whether to allow the case to go for trial, or have it summarily dealt with—the further hearing of the summons was adjourned.

At the rehearing of the case on Tuesday, Dr. Monks, medical officer under the Factories Act, deposed that he visited Mr. Galwey's establishment, and, in his opinion, from the construction of the chimney, it ought to carry off the smoke. He saw the workmen in the establishment, and they appeared extremely healthy. In his opinion, the position of the chimney did not militate against the health of the people in the place. There was no sign of soot on the walls, and it would be there if the chimney smoked to any extent.

In reply to Mr. Boyle, C.E., who was present on behalf of the Public Health Committee, Dr. Monks said *the fire was not lighting* when he examined the chimney. The smoke might be injurious to neighbouring houses, although not affecting the house from which it issued.

Mr. Ennis said that, although he consented to a postponement of the case on the previous day of hearing, he had examined Mrs. Star, Mr. Boyle, and other witnesses, in order to give the defendant an idea of the nature of the case against him, and with a view of inducing him to make the necessary alterations in the chimney. Mr. Galwey had, however, determined to adopt a different course, and he had tendered the eveidence of Dr. Monks, a gentleman who had only visited the place yesterday, when the furnace was not lighting and when every preparation had been made for his visit. Mr. Ennis thought the evidence of Mrs. Star and the young ladies in her employment who suffered from the nuisance, should outweigh any scientific evidence of the nature of that given by Dr. Monks. Several witnesses were then examined for the prosecution. After considerable discussion, the customary order was made for the abatement of the nuisance within 21 days, by raising the chimney to the proper height.

In correction of Mr. Boyle's statement as to the crowded state of the workroom in question, Mrs. Star says the apartment is 30 feet by 15 feet, and 13 feet high; that it contains 5,850 cubic feet, averaging 450 cubic feet per person employed therein, which is 150 feet per person more than is required under the Factory or Workshop Act. There is also a dressing-room attached for the use of the workpeople.

SCULPTURE.

We recently inspected some excellent specimens of ecclesiastical sculpture, in figures and foliage, executed by Mr. Joseph O'Reilly, 4, Anglesea-street, Cork, which indicate a very high order of ability and a keen appreciation of the beautiful. Mr. O'Reilly's works, judging from what we saw, evidence the possession by their author of those qualities which, when well directed, lead to certain success. It is a pleasure as well as a duty for us, as art journalists, to direct the attention of our readers to this talented young sculptor, in the hope that our doing so may be beneficial to him.

Arbitration v. Strikes.—The *striking* events which have taken place in Liverpool during the past two years are likely to leave a salutary effect upon the actors in them. The proverb " Once bit, twice shy," seems applicable. Both employers and employed have suffered so much, that all branches of the building trade, except the masons, are desirous of adopting a more rational plan than fighting it out whenever a difference arises. To this end it is proposed on both sides to establish a public court of conciliation and arbitration, whose decisions shall be final, and binding on all; and the chairman of the Master Builders' Association has been requested by representatives of the joiners, house-painters, bricklayers, plasterers, and plumbers to convene a mass meeeting, for the purpose of forming such a court. It is to be hoped that by that time the masons will see the necessity of joining their brethren.—*Builder.*

THE "ROYAL" HISTORICAL AND ARCHÆOLOGICAL ASSOCIATION OF IRELAND.

The third quarterly meeting of this Association was held at Butler House, Kilkenny, on Wednesday, 6th ult.,

Dr. J. A. Purefoy Colles, in the Chair.

The following were elected: As Fellows—Frederick Adolphus Jackson, Esq., Roscrea; Right Hon. Lord Gort; Right Hon. General Dunne; and J. A. Purefoy Collis, Esq., M.D.

As Members—Right Hon. the Earl of Antrim; John O. Westwood, M.A.; Albert Courtenaye; James Prendergast; William Clarke; Joseph Johnston, Dublin; C. W. Dugan, M.A., Derry; John A. Coghlen, M.D., Kilmacthomas; John Copeland, Ballymore Eustace, County Kildare; Rev. Michael Malone, R.C.C., St. Michael's, Limerick; William R. Molloy, A.B., Mullingar; Jacob Powell, Esq., J.P.; Matthew W. Berry, M.D., Belfast; Lewis Lloyd, Esq.; Edward Fitzgerald Ryan, R.M., Wexford; Robert Guerin, Dublin; and Rev, W. K. Hobart, Wexford; A. O'Callaghan, Derry; J. E. Sealy Frazer, Dublin; Thomas Plunkett, Enniskillen; Rev. W. E. Mulgan, A.B., Belfast.

On the motion of the Rev. James Graves, seconded by Rev. Dr. Martin, W. E. Mahony, Esq., was elected Honorary Local Secretary for Enniscorthy, and C. W. Dugan, Esq., for Londonderry.

Mr. Graves read a communication from the Royal Institute of British Architects, arranging for an exchange of publications with this Association.

PRESERVATION OF THE RUINS OF GLENDALOUGH, CO. WICKLOW.

Dr. Colles, the Chairman, brought before the Society a proposition for taking such steps as might be calculated to preserve from destruction the far-famed architectural and monumental remains at Glendalough, in connection with which subject he read the following statement:—

The efforts of our Association to check the further ruin of the churches of Clonmacnois have been so successful as to induce me to call attention to the present state of the far more interesting and picturesque buildings at Gleanndalocha, in hopes that similar efforts may be made on their behalf. The cathedral and the "priests' church" (of which latter little remains but the foundations), standing in the most popular burying-place of the county, have suffered wofully from sacrilegious hands. The other churches, round which burials do not take place, have escaped this danger, but are rapidly being broken up and reduced to mere heaps of stones by the luxuriant growth of young trees in the crevices of their walls. Having spent three days during last month at Glendalough, examining the present state of the ruins, I would offer the following suggestions for their repair; beginning with the most easterly churches:—

1. The Abbey, Monastery, or Priory of St. Saviour, is the only church which retains any of its Romanesque features, namely, the chancel arch, of which the bases and shafts on both sides, and two out of the three capitals (the third has disappeared since Petrie described the arch) on the south side remain *in situ*. Nearly all the voussoirs of the arch have been collected within the last few years, and are lying in the chancel. A number of the carved stones forming the inner face of the east window have also been collected. The walls are rapidly being broken up by the growth of young trees, which should be cleared away. The nave is blocked up with a heap of ruins 6 or 7 feet high, which would probably yield materials for the restoration (along with the stones now collected) of the chancel arch and east window, and perhaps also of the south doorway, of which only the jambs now remain.

2. Trinity Church is the most perfect in the valley, but the trees are beginning to destroy it; the south nave window is already considerably distorted by them, and some of the stones of it have been forced out. The central voussoir of the fine chancel arch has sunk considerably. The square building at the west end, which originally carried a round tower, is very ruinous, and the curious south doorway of the nave (which, if we can trust the drawing given by Ledwich, had a triangular head) is now a shapeless breach, of which the upper part must soon fall. The jambs—of which the lower parts remain—should be carried to a sufficient height, a lintel inserted (slabs of clay slate fit for the purpose abound), and the rest of the breach filled with masonry; and, above all, the trees should be cleared away.

3. The Gateway of the *Caiseal* was well restored a few years ago, and is in good condition.

4. The Cathedral. Little could be done to check the ruin of this noble old church, beyond replacing some of the large stones at the angles of the nave, which have fallen, and building up the breaches in the walls. But there are lying about the church a number of the carved stones of the Romanesque east window (of which nothing is now left standing but a portion of the southern pilaster), and of the Romanesque north doorway of the nave, which was excavated in 1857. These are all composed of soft oolite, like Caen stone, and hence are rapidly being destroyed. They should be removed to St. Kevin's House, to protect them from further injury,—as also should several carved stones (including the lower part of the curious pediment described at p. 246 of Petrie's "Round Towers") belonging to the Priests' Church, now lying in the nave. An iron railing should be put round the remains of the north nave door, and another round the inscribed tomb and the font in the north-east corner of the chancel; unless the two latter were removed to St. Kevin's House. A mass of fallen wall at the east end of the nave should be removed, so as to expose the base of the jambs of the chancel arch (of which nothing else remains). In the chancel is a square mass, built of the stones of the church, which if taken away would probably be found to include some of the carvings of the east window.

5. Of the "Priests' Church" only the lower two or three courses of masonry remain—they should be railed in. As many of the carved stones (of which several are lying in the cathedral,) as possible should be rebuilt into their proper places; those which, in the present state of the ruin, could not be replaced *in situ*, should be deposited in St. Kevin's House.

6. The Round Tower is becoming very ruinous. The north jamb of the eastern upper window has fallen; the joints throughout the building have opened a good deal; and, at about three-fourths of the way up, the wall has bulged extensively in two places. Were the repairs of the tower (necessarily very costly,) undertaken, they should be done thoroughly, and advantage of the scaffolding should be taken to restore the conical cap (many of the stones of which would probably be found in the tower), thereby rendering the structure weather-tight.

7. Our Lady's Church is greatly overgrown with trees and ivy, which are beginning to break it up. They should be cleared away, and the breach in the north wall of the nave should be repaired. No architectural feature of this church survives except its noble western doorway. But if the mass of fallen masonry at the east end of the nave, and the ruins filling the chancel (which is more modern than the nave), were cleared away, the stones of the windows would probably be found. If it be true that St. Kevin was buried in this church, we might hope to find, if not his tombstone, at least those of some of his successors here.

8. St. Kevin's House or "Kitchen" (which latter name was, I believe, first applied by the "guides" to the *erdam*, but is now extended to the whole structure,) is in better preservation than any of the other churches. The roofs, however, of both the nave and the belfry want some repairs, as the rain is beginning to percolate through them, and to injure the vault. The *erdam* or sacristy has sunk to the northward, and is very ruinous; a great part of its stone roof has fallen, and a thorn-bush is growing from the remainder. The chancel fell, or was pulled down, about thirty years ago; but the stones of which it was built are piled up into a large square mass at a little distance to the eastward. It might be possible to rebuild it with them, and the attempt thus to restore this very unique church to its complete state would be worth making. In any case the sacristy should be repaired. The (modern) south window of the nave and (unless the chancel were rebuilt,) the chancel arch should be filled with iron grating, as has been done at St. Flannan's House, Killaloe. The western doorway of the nave should be re-opened, and provided with a grated iron door, of which the keys should be left with some trusty person. In the nave, when thus secured, should be collected all carved stones, wherever found, which could not be placed in their original position, and all fragments of crosses, sepulchral slabs, &c., which are not *in situ*. These relics would thus be preserved from the "guides," who have sold at least one inscribed tombstone in fragments to Cockney sightseers; and ordinary visitors could see enough of them and of the interior of the nave through the gratings at each end of the latter. Until this step (which would cost but very little,) were taken, no excavations or explorations should be made. To bring sculptures to light, without providing a safe place for their reception, is only to hasten their destruction, as has been but too well shown by the premature excavation, in 1857, of a large breach in the north wall of the cathedral nave. The carved jambs of a fine Romanesque doorway, to the extent of about a 1½ ft., were thus exposed, and have since that time been almost wholly destroyed; the soft oolite in which the mouldings were carved offering a tempting field for wanton mischief.

9. The sites of *Cro Ciarain*, the *Regles an da Sinchell*, and one or two other buildings, to the north, south, and east of St. Kevin's House, would probably repay excavation, which could be easily conducted, as these sites lie outside the cemetery. To the north of St. Kevin's House, especially, there is a raised piece of ground which promises well in this respect. The cemetery is full of foundations, which, if carefully measured, might give some information as to the plan of the monastery.

Besides innumerable small crosses and slabs of clay slate perforated with large square or small round holes, there are now the following ancient slabs in the cathedral and its neighbourhood:—

Large granite slab, broken in two. Interlaced cross, incised; and two small crosses within circles, in relief. Two inscriptions—one illegible, the other "OR DO DIARMA . . ."—In the chancel of the cathedral.

Clay slate. Plain cross and circle, in relief.—In the chancel of the cathedral.

Very large granite slab. Curious pattern of diagonal incised lines, with circles at their intersections, forming a number of saltier crosses, like that on the lintel at the Lady's Church.—Outside the west end of the Priests' Church. At the head of this slab is a cross of clay slate.

Granite. Simple but elegant incised cross.—On the pathway between the west door of the cathedral and St. Kevin's House.

Clay slate. Incised cross, with gracefully interlaced ends.—Half buried in a deep trench which runs northward beside the path leading from St. Kevin's House to the cathedral.

Granite (large broken slab). Plain cross and circle in relief.—On the ground between No. 5 and St. Kevin's House.

All these slabs, except perhaps the first, which may be in its original position, should be removed to St. Kevin's House.

The crosses of clay slate, of which there are great numbers throughout the valley, are for the most part very small. Many are extremely rude, and few, even of the better finished ones, show any trace of ornament. There are two granite crosses; the well-known one about 13 ft. high, which stands to the south of the cathedral, and the upper part of a small cross, now lying in St. Kevin's House.

The ruins above enumerated are all situated to the east of the lower lake, and form part of the ecclesiastical establishment founded by St. Kevin towards the close of his life. They may be said to constitute *Gleanndalocha* proper, as distinguished from St. Kevin's earlier settlement at the south-east of the upper lake, which was called *Disert Cuoimhghin*. The remains at Disertkevin consist of the Righfeart Church, Teampul-na-scellig, and numerous *caiseals* or circular stone enclosures, carns, and crosses.

10. The Righfeart Church retains its western doorway, but has otherwise been reduced by the growth of trees to little more than a heap of stones. Its plan, however, can be made out, the lower part of the walls being tolerably perfect; and among the ruins the arched heads of the windows, the voussoirs of the chancel arch, and the brackets which here (as well as at Trinity Church) carried the projecting eaves of the roof over the end walls, can all be recognised. From its remote situation, and from there having been no burials round it for centuries, this church has suffered less from spoliation than any other in the valley, and none is better worth reconstructing. There can be little doubt that it is the original church of St. Kevin, erected for him when he was induced to abandon his solitary life. The churchyard retains its original wall, and the foundations of several buildings are to be traced round it; so that careful excavation might enable us to recover the plan of the original monastery. The churchyard is full of small crosses of clay slate, one of which (Petrie—"Round Towers," p. 261.) is richly carved. The inscribed slab, vulgarly called King O'Toole's Tomb, has been mutilated till it cannot be recognised; but other inscribed slabs would probably be found in clearing out the ruins.

11. *Teampul-na-scellig* is reduced to little more than its foundations; and its inaccessible position, and the absence of trees near it, protect it from further injury. St. Kevin's famous "Bed" and "Chair," formed in the living rock, need no protection.

On a knoll above the Righfeart Church, overhanging the upper lake, and commanding a fine view of the valley, is a circular enclosure about 10 feet in diameter, containing a rude cross of clay-slate, and formed by a wall of loose stones, about two feet high, with an entrance facing the east. This looks like a sepulchral enclosure; but Dr. Petrie and the late Mr. Du Noyer ("Round Towers" p. 418. Proc., R.I.A., vii., p. 256, and ix., p. 424), considered it to be the "*mansiunculum*" or cell which St. Kevin built for himself, "*in loco angusto inter montem et stagnum*."

The ancient "pilgrims' road" extended northward across the valley from the Righfeart Church to the river which connects the two lakes, and was bordered by a line of carns and crosses, which still remain, as do a couple of "caiseals," apparently sepulchral enclosures, in the adjoining fields. But the southern half of the road has been destroyed, and its site ploughed over, within the last few years; and, unless some protector arises, the carns and caiseals will be cleared away one of these days.

The repairs which should be executed at Glendalough may be divided into the cheap and easily-executed, and the costly. The former, which should be undertaken at once, are:—

Clearing away the trees from the Abbey, Trinity, Our Lady's, and the Righfeart Churches.

Securing St. Kevin's House, and placing all loose sculptures, &c., therein.

Repairing the breaches in Trinity and Our Lady's Churches and the Cathedral, and the sacristy and roof of St. Kevin's House.

Railing-in the Priests' Church and the north door of the Cathedral.

The more costly repairs are:—

Thorough repair of the Round Tower, and restoration of the conical cap.

Excavation and restoration of the Abbey.

Do. of the Righfeart Church.

Do. of Our Lady's Church.

Excavations in the neighbourhood of St. Kevin's House, and, possibly, rebuilding the chancel of St. Kevin's House. In each of the above lists, those repairs which seem most urgently required are placed first.

Lovers of the picturesque may be horrified by the proposal to clear away the trees. But only the trees actually grown out of the walls need be interfered with, and with such an abundance of others, these would not be missed. The buildings should be inspected once a year, to prevent fresh seedlings from taking root.

Dr. Colles said that, on submitting to the Rev. James Graves the statement which he had just read, that gentleman, while expressing the most cordial approbation of the suggestions, and every possible anxiety to aid in carrying them out, pointed out that, having so much to do with the general working of the society, he could not undertake to work up the arrangements for getting in the necessary subscriptions for the undertaking; and residing so far away from Glendalough, it would be impossible for him to superintend the operations. However, he (Dr. Colles) would offer himself — if the association sanctioned the proposition—to issue the circulars and work up the preliminary arrangements as to getting in the subscriptions, which he would hope to have completed before returning to India. As regarded the directing and superintending of the operations, he had communicated with Thomas Drew, Esq., architect, who at once consented to take that portion of the arrangements on himself, and no one would be more competent for such a work. Of course nothing could be done without the consent of the proprietors of the property, in which position the Mining Company of Ireland stood. He begged to bring before the meeting a letter from the secretary of the Mining Company, intimating that "the board will be most happy to accede to the request in reference to the repairs of the round tower and ancient churches of Glendalough, County Wicklow." He might mention that they would do nothing which would interfere with the burial rights of the people of the district, or any other right which the public might be deemed to possess in connection with the ruins of Glendalough. He hoped there would be no difficulty in collecting a sufficient sum for the purpose, considering the great importance and historic interest attaching to Glendalough, and he was already promised a donation of £10 as a beginning.

Mr. Graves said this was not the first work of the kind their Association had undertaken and accomplished. They had collected and expended £130 for the preservation of Jerpoint Abbey, and over £200 for the reparation and protection from further injury of the Seven Churches of Clonmacnois. He would expect a wider sympathy even for the proposed work at Glendalough, as the ruins were more generally known, and their scenic and architectural beauty appreciated, by the public.

The chairman said, that returning to Ireland lately, after an absence of thirteen years in India, he had been much saddened by witnessing the serious dilapidation which had taken place in the ruins at Glendalough in the interim.

Dr. Martin felt sure that a movement of this kind would have national support. He had no doubt the newspaper press of Dublin and of Ireland at large would aid in laying the matter before the public, and that subscriptions for such a work would not be confined to the members of the Association.

On the motion of Mr. Graves, seconded by Mr. P. A. Aylward, the formal approval of the arrangements proposed by Dr. Colles, was unanimously agreed to be placed on record in their minutes.

THE KILKENNY MUNICIPAL ARCHIVES.

Mr. Watters, town clerk, brought for the inspection of the meeting a few of the ancient records of the Corporation of Kilkenny, for many years entrusted to his keeping. They would serve as a sample of the interest attaching generally to the Municipal Archives of Kilkenny. Much interest was evinced by the inspection of those records, which gave rise to an interesting conversation.

Mr. Graves said that they all felt very much indebted to Mr. Watters for enabling them to inspect these samples of the valuable ancient records of which he had been for so many years the truly careful custodian. It was well to see such care bestowed upon valuable muniments, in an age in which they were, in other places, cared so little for—in fact *left to rot.*

CRANOGE NEAR ENNISKILLEN.

Mr. W. F. Wakeman sent an interesting account, accompanied by plans and drawings, of the result of an exploration in a cranoge recently discovered in Ballydoolaugh Lake, near Enniskillen. He also sent a box containing the objects found, comprising bronze and iron implements, and great quantities of ancient pottery. A special vote of thanks was passed to Mr. Wakeman for his contribution.

Amongst the papers read and communications made to the meeting were:—

"Remarks on an Exploration of Rath Souterrains, at Ardfinnan, Co. Tipperary," by the Rev. James Graves.

"On the Ruins on the Island of Innishark, Co. Mayo," by Mr. G. H. Kinahan, M.R.I.A.

"On Bullauns," by Mr. G. H. Kinahan.

"On the pronunciation of the word *Ogham,*" by Mr. G. H. 'Geoghegan.

"On some Curious Bronze Articles, in the writer's possession," by Mr. E. Benn.

"On Incised Stones at Dalkey and Tallaght, Co. Dublin," by Dr. J. A. Purefoy Colles.

"On the Corporation Insignia and Olden Civic State of Kilkenny," by Mr. J. G. A. Prim.

The usual vote of thanks having been passed to donors and exhibitors, the Association adjourned till the first Wednesday in October.

ARCHITECTURAL PUBLICATION SOCIETY.

The annual general meeting of this society was held in the library of the Royal Institute of British Architects on the 7th ult., Mr. C. C. Nelson in the chair. Mr. Arthur Cates, after referring with regret to the death of Mr. J. Wyatt Papworth, which had occurred on the preceding evening, read the annual report, by which it appeared that since the special meeting of 19th January last, by which the proceeding with the completion of the "Dictionary of Architecture," was authorised, the attention of the committee has been devoted to the realization of this object. To attain this the acquisition of funds has been the first requisite. Success has attended the exertions made to procure them.

To complete the text of the dictionary it was estimated that about £2,600 would suffice, and to secure this amount 160 new subscribers for complete sets at £15 15s. each were required. Of this number 95 have actually paid the whole or part of the subscriptions, 17 others have undertaken to do so, and 48 only now remain to be obtained.

The balance sheets show that all debts and liabilities which had accrued up to Lady-Day last have been fully discharged, and that there is a cash balance of £1,165 14s. 8d. actually in hand and available towards the completion of the dictionary; also a further sum of £446 11s. 6d. will be gradually received by instalments, thus providing a total sum of £1,612 6s. 2d. to advance the text towards completion.

To provide the further funds required, 65 copies remain available, which, when all subscribed for, will produce £1,023 15s., which it is calculated will be sufficient to meet the further expenditure required. Seventeen gentlemen (as above mentioned) have sent their names as subscribers, but from various circumstances have not yet remitted their subscriptions; when they have all done so, the 65 available copies will be reduced to 48. It is of considerable importance that these few remaining copies should be appropriated with as little delay as possible; and the interest of every member is so involved in the thorough success of the work, which has now so far favourably progressed, that the committee with confidence anticipate that it will soon be able to report that all the past years' works are out of print.

The subscribers are very much indebted to many of their number who have with generous activity contributed to the success now reported; and the hon. sec. would gladly receive suggestions and assistance from many others who have stood by to await the result of the movement, and by whose help the remaining copies referred to could be readily disposed of.

During the time occupied in collecting the subscriptions, arrangements were made for proceeding with the text of the dictionary. A considerable portion of the letter M has been printed. Of the remainder, part is in type or setting up. The first sheets were laid on the table for the inspection of the meeting, and as soon as sufficient is prepared to form a part it will be issued to those entitled to receive it.

The balance sheets were also read. The hon. sec. stated the summary of them to be that, after closing the accounts for the 18th and 19th years to December, 1868, which completed the dictionary up to the end of letter L, paying all liabilities up to that time, and also discharging the outstanding balances for reprinting certain portions of the work, and clearing the society of all liabilities and debts, there remained a balance in hand of £285 9s. 1d. to be carried forward; then, having carried that balance forward, the subscriptions received on account of the completion of the dictionary, and taking into account the expenditure of all kinds connected therewith, together with the organisation of this scheme, advertising, and other expenses up to Lady-Day last, the balance in hand stood at £1,165 14s. 8d., of which amount £1,100 stood in the name of the treasurer, on deposit account, in the Union Bank of London.

THE MAIN SEWER AT DUNDALK.

In our last issue we alluded to the "wide tendering" for the above work. At the weekly meeting of the Commissioners the matter was again brought forward.

A communication was received from Mr. John Jackson (whose tender had been conditionally accepted at a former meeting), enclosing a cheque for £50 as security for the performance of the contract.

The chairman inquired if the board were satisfied with that security?

Mr. Hamill said the nuisance had been caused by the Dundalk and Greenore Railway Company, and they should assist in making the sewer.

The chairman read a letter from Mr. Barton, C.E., enclosing a minute of the proceedings at a meeting of the Dundalk and Greenore Railway Company on the subject, and which stated that they would give £200 towards making the sewer, provided they would incur no other liability.

Mr. Neville, C.E., in reply to the chairman, said he looked on the cheque for £50 as good security. The money was to be paid in sums of £50, and this would pay the first instalment.

Chairman—Then we accept Mr. Jackson's contract.

GAS LAMPS AND LAMP POSTS.

Our lithographed sheet with this number of the Irish Builder comprises several designs of Gas Lamp Posts at present manufactured and about to be erected in Belfast, viz.:—

No. 1, with details, shows one of the four lamps to be erected on the kerb of footways at the corners of the Albert Memorial Clock Tower. As some public interest attaches to these lamps, we extract a description from the specification:—The central column is of cast iron, having in four niches around the pediment twisted dwarf pillars, with capitals and well-modelled lions supporting brass shield with monogram, embossed, as No. 1a and No. 1b details. Around the shaft are fitted wrought-iron vertical straps or pilasters. The capital consists of richly-foliated hammered copper. The neck of the column is ornamented with copper leaves and rosettes, and from it also spring the wrought-iron scroll arms, which have accommodation for supporting ladder for lighting and cleaning purposes. The lamps, which are surmounted with foliated copper crown, are all of stout copper, and spherically glazed in eight longitudinal panes, having ventilating zone and crown ventilator. The work is painted a handsome bronze green; the copper capitals and crown and other foliations are to be suitably gilt after erection.

The Belfast public have been on the *qui vive* for these lamps for some months. Being now finished and ready for erection, we may pronounce on their merits after a careful inspection. The design, which harmonizes with the architecture of the tower, is excellent. It can scarcely be done justice to by a lithograph to a small scale. The workmanship has been executed in first-rate style. The castings are remarkably sharp, and the hand wrought-iron and copper work is careful, yet vigorous. The work is noticeable in every particular for the spirited and artistic manner in which it has been treated, highly creditable to Messrs. Riddel and Co.

No. 2. Gas lamp for porch piers of new residence for J. P. Corry, Esq.

No. 3. Gas lamp for piers of entrance gates for the same gentleman.

No. 4. Gas lamp for piers of president's entrance, Wesleyan College.

No. 5. Gas lamp for NE. and NW. corners of Wesleyan College.

IRELAND IN THE WORKING MEN'S INTERNATIONAL EXHIBITION.

SPECIAL NOTICE.

With the exception of Belfast and its environs, Ireland's share in the Working Men's International Exhibition is rather meagre. "The Northern Athens," of late years foremost in the van of commercial and manufacturing progress, presents a fair face, and shows her capacity in the fields of invention and skilled labour. We were extremely well pleased to notice the several proofs of Belfast genius and enterprise which we witnessed in the Agricultural Hall at Islington. In machinery, the Messrs. Moreland and Colong exhibit a first-class pneumatic loom—an air-pick loom showing many advantages over the ordinary loom. In the matter of waste time and waste material, the adoption of Messrs. Moreland and Colong's machine will possess a wondrous saving as to working, wear and tear, and general expenditure. It is smooth in working, and it is nowise complex in construction. It has already been adopted by several firms in England, and several new ones are in course of construction by the exhibitors. The loom in itself, as a piece of skilled workmanship, is undeniably excellent.

A spinning frame is also exhibited, of Belfast make, called Ward's patent waste-preventing spinning frame. This capital and clever invention will soon, we hope, supersede the ordinary spinning frame. It is simple in construction, and in its working it entirely remedies all the defects consequent in the use of the ordinary spinning frame. The picker and knife process is obviated, and the broken thread is kept from running round the rollers as waste, entailing very often not only loss of time, but damage to the machine in its removal. Several of these new frames may be seen in Messrs. Moreland's Loop Bridge Mills, Belfast. There is no doubt they will come into extensive use shortly.

Foster Connor exhibits a power loom of compact construction for the weaving of stuffs for towelling, &c. It works with uniformity and exactitude, and is smooth in motion. The exhibitor is a manufacturer of plain and fancy drills in variety. Joel Holden, who is employed in the works of Messrs. Connor, is the maker, and it is creditable to his genius and to the house that secured his services.

In the matter of furniture, a magnificent solid mahogany sideboard and cabinet, with surmounting mirror, is exhibited in the Belfast section, the work of a youth of the name of Charles M'Gowan. The carvings and decorative portions of the work are splendid, and, what is more, well designed and appropriate. The carved head of Bacchus on the door, the vines and scenes from Neptune's Feast, and the Rape of the Sabines, are exceedingly well carved. The latter carvings are around the border of the mirror. Perhaps to some eyes they will appear slightly heavy, but on the other hand, taking the massive sideboard into account, they add to the air of solidity characteristic of the whole piece of furniture. We hope this sideboard will meet a purchaser; it is cheap at £100, and is well fitted to occupy a room either in a royal household or a baronial mansion.

An exquisite spinning wheel, the work of Mr. J. M'Creery, of Belfast, is shown by the maker and exhibitor in person. It is perfect, and faultless in workmanship. Mr. M'Creery has already presented one of his spinning wheels to the Queen and the Countess Spencer, and a few days since the wife of the Premier has accepted one, more exquisite in workmanship and finish than even the Queen's. Mr. M'Creery has won the gold medal at the Belfast Exhibition, and is in receipt of other honours. The letter of Mrs. Gladstone is to acknowledge the present of the spinning wheel. Mrs. Gladstone says:—"*I have placed her in my room, with the intention of learning to spin.*" We trust that some of our Irish ladies will spare a little time from music and the opera, and imitate Mrs. Gladstone in learning to spin.

Mr. William Gibson, of Belfast, shows a superb case of bog oak ornament, richly inlaid in gold and highly ornamented in design. Cork, Killarney, and Dublin had better look to their laurels.

A new design for manipulation of revolving shutters, and their easy and economic working, is also shown by a Belfast exhibitor and maker. The contrivance is simple, and the principle a good one. We may have occasion hereafter to allude to it and other similar things more in detail.

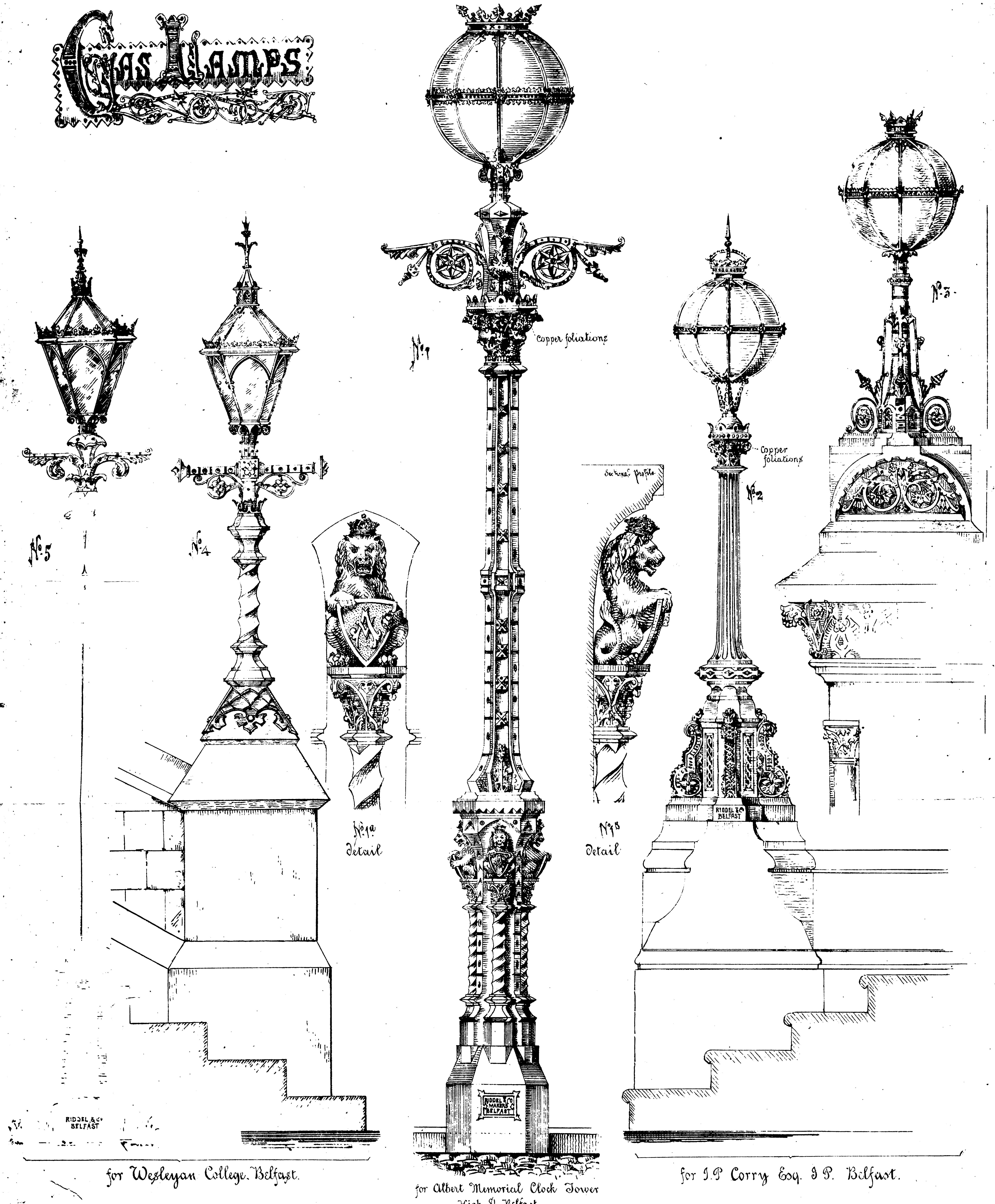
Belfast linens and sheetings, table-covers, towellings, handkerchiefs, damasks, and worked muslins, embroidery, and lace, are to be seen, showing a great perfection in improved manufacture. Mr. John S. Brown, of Belfast, shows a quantity of highly-finished specimens of table and other linen, plain, fancy, and flowered, snowy white, soft, and exquisitely fine in texture. Some specimens are here, manufactured for the Egyptian market, exhibiting flowered hieroglyphic illustrations and domestic and other decorations peculiar to that country. These specimens are worth seeing. Belfast linens can compete with the world, and push a market anywhere on their own intrinsic merit. There are other specimens of plain and fancy linens exhibited, the manufacture exclusively of a workman the name of James Lytle, of Brookfield Flax Spinning Mill, Belfast. Hanks of Lea linen yarn of 48,000 yards to the pound are also shown, and twist linen yarn containing 98,000 yards to the pound; specimens of dressed and scutched Irish flax; Courtrai flax, dressed and cut; Dutch flax cut and dressed: similar specimens were exhibited in the Belfast Working Men's Exhibition recently, and received premiums.

Alexander Crawford and Son, chemical and starch manufacturers, Belfast, exhibit a large and beautiful quantity of their snow-white starch, now becoming so popular. It is to be seen to great advantage in a tastefully-designed case, surmounted with the Irish harp and wreaths of shamrocks. Mr. Crawford's starch is making headway, and it is now used in the Royal Laundry at Richmond. Its qualities as to stiffness and whiteness is vouched in a letter by Mr. John Thompson, of the Royal Laundry. We hope the Messrs. Crawford will stiffen their own sinews, and summon up their northern blood to renewed efforts in whitening up the great unwashed universe.

Simpson and Co., of Belfast, show a splendid quantity of tweeds, through their London agents, Messrs. Samuel, Brothers. Tweeds of all colours and textures, twilled and ribbed, black, white, grey, brown, for coatings, trouserings, vestings. The patterns exhibited are fine and strong, and we are certain they will outlast by years the piebald "shoddy" and cotton mixtures so pleasing to the eye, but so disagreeable to the wearer. The prices are moderate indeed, and we should recommend our Dublin and London readers to try a suit of clothes made out of these Irish everlasting tweeds.

We have Irish statuary, in Scrabo quarry stone, the work of Edward Clancy. His "Beggar" is a matchless piece of unpretentious yet speaking sculpture. In looking at this figure you think you know the original, that you often met him in some city in Ireland or elsewhere, for beggars are wandering Jews in a manner, and they are not always given to have a " local habitation and a name." This bit of Belfast sculpture has already elicited much notice, and we believe it has already been purchased or bespoke. There is many a village Phidias and Praxiteles

Gas Lamps



for Wesleyan College, Belfast.

for Albert Memorial Clock Tower
High St. Belfast.

for J. P. Corry Esq. J. P. Belfast.

Scale 1in to 1 ft

J. Phillips delt et Litho

working by the quarries of Ireland, "born to blush unseen." We trust that Edward Clancy has not transformed his last unhewn boulder into the image of man. However, if he had done nothing else but this bit of statuary, there is sufficient genius and talent evidenced in the funny leer and features of this beggarman's face; the eccentric twist and form of his body, his overflowing pockets, into which everything is stuffed, from an Irish sandwich to a latent bottle of contraband poteen,—there is sufficient genius, we repeat, in this hurriedly hewn piece of Irish sculpture to have made the fame of any artist outside of poor wrong-judged and prejudiced Ireland.

We had other things to notice, and there are various objects we wished to notice, but they must, for the present remain in abeyance. Inventions in firearms and shells, fire-escapes, mechanical contrivances, models, drawings, articles for domestic use, cases of sewed muslins from Pelling and Co., quite as good as their already noticed whiskies from the noted distillers, Dunvilles, of Belfast, bottles and corks, showing perfect Irish workmanship, and sundry and several things appertaining to Belfast and elsewhere.

Belfast is well represented in the Working Men's Exhibition, and we only wish we could say that the capital of Ireland was equally so. Ireland's share in the Exhibition is small, but whatever hails from her shores can stand the test of scrutiny and examination. So far so well.

HOW TO WRITE A SPECIFICATION.*

It is, we think, Mr. Wightwick, the author of "The Palace of Architecture," who, speaking of the anxieties of architectural practice, adverts especially to those attending the composition of a specification; and ventures on the quaint assertion, "the architect's wife always knows when it is *specification day*":—

Hyperbole soars too high, or creeps too low;
Exceeds the truth, things wonderful to show,

says an old treatise on rhetoric; and doubtless there is a little hyperbole in this assertion of Mr. Wightwick's. If, however, he merely meant by it to show what a mental worry to the architect is the drawing up of a specification, it is hard to say how he could have more pithily expressed a well known truth. The composing of a specification is unquestionably a disagreeable and anxious task at all times. It is not like the drawing up of a lease or a marriage settlement, a matter of very much routine and very little imagination; but is really the concocting of a paper that shall possess to the full all the routine lore of the legal document, and a considerable amount of thought and special invention or imagination to boot. If every church or chapel, every warehouse or shop, and every mansion or cottage were alike, the labour of the architect in drawing up a specification would approach somewhat to that of the lawyer, and architects might hope to lay down for themselves some accepted form, or head and tail of a form, that would for all time serve all possible cases, if it were but to take the well-known exordium of, "This Indenture made and entered into this—year of our Lord—witnesseth," &c., &c., and terminate with the good old peroration, "anything to the contrary hereof in anywise notwithstanding."

But, alas for the poor architect, it is not for him to exclaim, with the Virgilian Shepherd,

"*Deus nobis hæc otia fecit.*"

for neither gods, clients, nor contractors give him any such "ease," or, as the lawyers have it, "easement." No two of his buildings are alike, or sufficiently alike to warrant him in making the specification of any one of them do service for any other. There is nothing for it but to sit down and compose a special document for each individual case. We know very many architects of great skill and extensive professional experience who look with loathing on the task of writing out a specification; and ludicrous tales might be told of attempts made to get over the difficulty, or rather the irksomeness, of the task, by setting some junior clerk to hash up or collate from one or more old specifications, by way of getting a lift to the solution of the hateful problem. Let us not disedify the young reader of this article by an exposure of any of these many "dodges," especially as we may safely predicate of them that they are all more or less futile, and that, by the time the task has come to an end, the composer invariably finds he would have done far better to have first looked his difficulty in the face, and have sat down to a bran new specification.

To architects (London ones *par excellence*) who do not take out and issue their own quantities, drawing up of an original specification is an absolutely painful task, and one, moreover, that can only be accomplished with any approach to perfection by the previous getting out of a most complete set of drawings—such a set, indeed, as very few architects in large practice can hope to find time to prepare; and even when they have done all this, the surveyor who is called in to take out the quantities for the builders will be almost certain to discover many matters inadequately or improperly specified, if not altogether omitted. Such architects do well to keep by them their old specifications, such at least as have been carefully prepared, and for edifices resembling, as nearly as may be, the work to be specified. We say advisedly *their* old specifications. If a man aspire to method and accuracy in composing his specifications, he can always with confidence collate from his own documents; but with very little confidence or satisfaction can he copy the specifications of another. The chances are that his own old specification will have on its fly-leaf or margins some pencil notes of items omitted or ill-described; and these he will find of great service in the composition of a new document.

Architects vary very much in the respective modes of composing these documents. Very many of them take an absolute pride in the length of their specifications. They stint the number of their drawings, and trust to the prolixity of their specifications to make up for their shortcomings in delineation. It is a signal mistake. The form, the size, the number, the position of any separate portion of an edifice can be far better and more clearly expressed by delineation than by writing; and, where time admits, these matters should be described by drawing. When this can be done the shorter of a specification can be the better it will be. Its province should be to specially define when or in what order, with what materials or ingredients, and in what style, quality, or manner the works are to be executed, leaving the drawing to explain their form, size or dimension, their number and position in the building; and indeed, if architects would but observe this rule, we see no reason why some enterprising publisher of office forms might not with great advantage to the profession issue a set of printed skeleton sheets, whereon architects might draught out their specifications—such sheets to set forth the preamble, the general conditions and the trades in usual sequence; each trade sheet containing, pretty widely apart, marginal titles of the usual items of a building, for the architect to expunge or to fill up as he found necessary. On such printed sheets we would have printed in full for use all those stock clauses that every architect embodies as a matter of course in his specifications—clauses that, like the laws of the Medes and the Persians, "alter not," such as the growth and seasoning and freedom from sap of the timbers, the thickness of mortar joints, the pargetting of flues, the goodness of stone and the placing it on its natural bed, &c., &c, These are matters that cannot be expressed by delineation, and which make up clauses that not only pertain solely to specifications but are of invariable use—stereotypical clauses in fact, that may very fairly be stereotyped for all time; and the mind of the architect may be set free from the bother of seeing to their due insertion in the right place.

We need hardly say that the most perfect specifications are, or ought to be, those which are written out by the person who computes the quantities, even though he be not the actual architect of the intended building, but an independent building surveyor. In either case, the usual process is to take out the quantities from the drawings with the aid of a rough general specification, this latter document being subsequently amplified and perfected by collation from the surveyor's dimension-book. In the process is very often involved a thorough over-hauling of the drawings themselves, which, however conscientiously prepared, will seldom be found to stand the test of a bill of quantities.

Specifications of alterations and repairs of buildings should always be drawn up on the buildings themselves, the latter being begun from the roof outside, thence continued to its inside, after that downward from topmost room to basement, ending with the stairs and passages, taken in like order. The greatest mistakes may be made by attempting to compose such specifications in the office, away from the structure to be altered or repaired.

For the avoidance of errors and omissions in these tiresome documents young architects will do well to determine for themselves a handy rotation of trades and their respective items or operations; and, having done so, to adhere to it, and gradually acquire the habit of compiling future ones from their own documents alone. Their headings may be as copious and as oft-articulated or dissected as they please to make them, for all this tends to perspicuity, and perspicuity will ward off litigation, the very service a client requires in his architect. As to the paragraphs or clauses themselves, the shorter they are, and the more they can be exchanged for drawings, the better; indeed, we cannot better close these observations than by quoting the pithy remark of an eminent contractor, who, being asked to define in what a specification consisted, declared it to be simply "Drawings, drawings, lots o' drawings."

HEALTH OF DUBLIN.

In the Dublin registration district (which extends over an area of 9,745 statute acres, and had, by the Census of 1861, a population of 314,409), the births registered during the week ending July 23rd, amounted to 165.—76 boys and 89 girls. The average number in the corresponding week of the years 1864 to 1869 inclusive, was 173. The deaths registered during the week were 118—62 males and 56 females. The average number in the corresponding week of the previous six years 109. Seven deaths resulted from fever, viz.:—1 from typhus, and 3 each from typhoid or enteric, and simple continued fever. Scarlet fever caused 4 deaths, measles 1, croup 4, and 11 deaths were caused by bronchitis, and 2 by pneumonia or inflammation of the lungs. Apoplexy was the cause of 3 deaths, paralysis of 5. Heart disease caused 9 deaths, and 1 by aneurism, 1 death was ascribed to nephria or Bright's disease, and 1 to "urinary disease." Twenty persons died from phthisis or pulmonary consumption, mesenteric disease 2, and hydrocephalus or water on the bain, 3. Five persons died from cancer. Three deaths were the result of accidental causes, and 1 was suicidal. Of the persons whose deaths were registered during the week 32 were under 5 years of age, and 31 were 60 years and upwards.

The number of deaths registered in the entire of the Dublin Registration District during the week, represents an annual ratio of 20 in every 1,000 of the population by the census in 1861. In the surburban district of Rathmines the annual ratio was 10 per 1,000; in Donnybrook it was 19—the City of Dublin Hospital and the Hospital for Incurables are situated in this district; in Blackrock 37 deaths, and in Kingstown 12 deaths per 1,000 of the population by the Census in 1861.

At the Observatory of the Ordnance Survey Office, Phœnix Park, the mean height of the barometer during the week was 30·125 inches. The highest daily mean reading (30·217) occurred on Tuesday, and the lowest (29·998) on Sunday.

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* From the *Building News*.

ARCHITECTS' CHARGES AND PROPERTY IN PLANS.

The case, Ebdy *v.* M'Gowan, has been tried in the Court of Exchequer, Guildhall, London, before the Lord Chief Baron and a special jury.

Mr. T. C. Ebdy, of Durham, the plaintiff, is an architect, and the Rev. E. M'Gowan, the defendant, employed him in the preparation of plans, &c., for several churches and a parsonage. Defendant had paid £25 on account, and lodged £100 in court, disputing his liability for the remainder of the claim.

Mr. Seymour stated the plaintiff's case:—His client was instructed by the defendant to prepare designs and specifications, and to obtain tenders for a church to cost about £2,000, and did so. When the tenders came in, however, the defendant, according to the wish of his bishop, had determined to build two smaller churches instead, and this first church was abandoned. For his services plaintiff charged 3 per cent., being as per scale of charges of the Institute, and this formed the first item of his bill. Plaintiff then prepared designs for the second church, which was built, at a cost of £900, and for this he charged the usual commission,—5 per cent. He also prepared designs for two other churches not yet built, for which he made no charge whatever. The remainder of the account, as regards the churches, was made up of travelling expenses, stationery, postage, &c. He also prepared designs and got tenders for a parsonage to cost about £2,000, for which defendant hoped to obtain a grant from the Ecclesiastical Commissioners, and the drawings and specification were sent to and duly approved by them with that view. When the tenders came in, defendant refused to allow plaintiff to proceed with the work, alleging certain neglect on his part as to the church, and demanded plaintiff's drawings and his account. Plaintiff sent in his account, charging 3 per cent. and expenses, as before, also surveyor's fees, but declined to surrender his drawings, as contrary to usage. Defendant refused to pay the account, disputing the correctness of the charges as to the churches, and denying his liability as to the parsonage altogether. He also refused a reference offered by plaintiff, and had a copy of the account printed for circulation among the clergy of the district.

Mr. T. C. Ebdy, the plaintiff, was examined at length by Mr. Bruce and cross examined by Mr. Aspinall, and gave evidence in detail to the effect stated.

Mr. W. Fogerty, architect, examined by Mr. Bruce as to the usage of the profession, said, the ordinary charge is 5 per cent. for full service, besides travelling and other incidental expenses. Should the work be abandoned before tenders are received, the charge is 2½ per cent.; if tenders are received, 3 per cent. The surveyor for taking out quantities is usually paid by the builder who gets the work; but if the work be abandoned he is paid directly by the employer. In every case the drawings are the property of the architect.

Cross examined by Mr. Aspinall—In abandoned work the client has no right to the plans; they would be no use to him. In the case of a client dismissing an architect in order to employ some other, unless it was done by consent, he considered the plans should not be given up either. It was unusual and irregular for a client to dismiss an architect till the whole work was done. The general rule is that the drawings are kept by the architect.

Mr. J. P. Seddon, hon. secretary of the Royal Institute of British Architects, examined by Mr. Bruce, gave similar evidence to that of the last witness. He would consider it most unjust for an architect to have to give up his plans, to be carried out by some one else, possibly to the injury of his reputation. The usage of the profession is set forth by the published scale of the Institute.

Mr. Aspinall stated the defendant's case—As to the first church, he said, his client never wanted a north aisle to it at all, and before the tenders came in he had countermanded them. He therefore should not be charged commission on the north aisle, nor for getting tenders, as by the printed rule the tenders should have been procured in order to entitle the architect to the half per cent. for them. The item for the second church, which had been built at a cost of £900, his client did not dispute; it was all that had been built from all the plans for which this enormous sum of £241 was charged. The travelling expenses, advertising, &c., were excessive. His client had distinctly advised plaintiff that he should look to the Commissioners, and not to defendant, for payment. His offer to pay was on condition that the plans be given up to him, which plaintiff refused to do; and, in fact, plaintiff expected to be paid without giving anything in return.

Chief Baron—This seems to be entering on the question so recently agitated between the public and the architect of the Houses of Parliament.

Mr. Aspinall—Not exactly, my lord; for there the work was finished, and the plans done with; but here the work was not even begun, and my client could do nothing without the plans.

Mr. Bruce—It is really the same question, my lord; for if the client is not entitled to the plans when he pays 5 per cent., how can he expect them when he pays only 2½ or 3?

Chief Baron—I shall not enter on that question here, but give the defendant leave, in case of a verdict against him on this item. to move to have the verdict reduced, or a nonsuit entered, as the case may be, should he be able to show cause before the full court. Had I known the nature of the case sooner, I would have ordered it to be referred.

The Rev. E. M'Gowan was then examined in support of the case stated by his counsel. He had declined to proceed with the parsonage because the cost slightly exceeded the proposed grant, and he was dissatisfied with Mr. Ebdy.

Mr. Sydney Smirke, R.A., examined—It was the usual custom, he said, for the architect to retain the drawings; but in case of work abandoned, he thought the client had a right to them; also, if another architect were employed to superintend, as for works at a distance, as in the colonies, he thought the drawings should be given up also.

Chief Baron—Never mind about the works in the colonies: tell us what is the custom in a case of this kind.

Mr. Smirke—I think they ought to be given up, and in my own practice have acted accordingly. I never charged for stationery.

Cross-examined—Knew the rules of the Institute. Seldom attended their meetings. Had never subscribed any resolution to the contrary effect of the evidence given.

Mr. Aspinall addressed the jury for the defendant. His client, he said, had never authorised the north aisle, nor getting tenders for the first church. He was in no way responsible for the parsonage plans, which were to be paid for by the Commissioners.

Mr. Bruce replied for the plaintiff. He was sure the jury would be indignant at the defence set up as regards the parsonage, since it was clear, from the correspondence between defendant and the Commissioners, that he knew the latter would not be liable. The rest of the claim had been fully proved.

The Chief Baron then charged the jury. He did not see, he said, what answer had been given to the first item. It was clear the north aisle had been shown on all the plans, and the defendant must have known of it. As to getting tenders, if they thought these had been countermanded in time, they would disallow the half per cent. for this—about £10; if not, they should allow it. He thought the travelling expenses also proved. The item for postage and paper was controverted by Mr. Smirke; it was but a small one. As respected the parsonage, it was hardly to be believed that Mr. Ebdy would have done all this work without knowing who was to pay him. The Commissioners could not be called on to do so, and the defendant must have known this. If defendant had not dismissed the plaintiff, the work might have gone on, and he (the Chief Baron) hoped it would yet go on, as it appeared that the plans had been satisfactory both to defendant and the Commissioners. In the meantime they were called on to decide whether the defendant was liable or not, and certainly nobody else was. The surveyor's item could hardly be questioned, as the defendant himself, by not employing a builder, had prevented those fees from being paid in the usual way. The plaintiff, by not charging for several plans, had shown no disposition to be grasping towards defendant.

The jury almost at once returned a verdict for plaintiff for £106 beyond amount paid into court,—being £10 less than the full amount of the claim, leave being given to defendant to move the full court to reduce the amount, should it be of opinion that plaintiff was not justified in retaining the plans of the parsonage.—*Communicated to Builder.*

NEW PROCESS OF METAL CASTING.

On Saturday afternoon a party of gentlemen from London, Manchester, and other places assembled at the works of the Lancashire Engineering and Compression Casting Company, St. Helen's Junction, to witness a new patent process of casting refractory metals. The invention is of American origin, and has only recently been introduced into this country, where it will probably soon effect something like a revolution in the various kinds of work to which it is applicable. Besides possessing the sole right of making machinery for the whole process, the Lancashire Engineering Company have secured the first English license to carry it on, including exclusive use for certain branches, such as the manufacture of articles connected with household furniture. It was chiefly in these branches—finger plates for doors and the like—that the experiments on Saturday were tried. The result was such as to show conclusively that by this new method exact castings of plain, chased, or elaborately embossed work can be produced in brass, iron, bronze, &c., without any skilled labour, after the production of one pattern. Hitherto the common loam moulds have only given out rough impressions, each of which, for all ornamented objects, required to be laboriously finished with delicate tools by trained workmen. This troublesome and costly work may now, however, be obviated with advantage. The *modus operandi* is exceedingly simple, albeit effective. In the first place, the pattern is placed on an oiled foundation plate, and besmeared with fine wet clay. It is then buried in a box with mixed clay and sand, which covering is pressed downwards until it assumed the consistency of an unbaked brick. In this state the clay cake is carefully removed from the box, turned upside down upon a table, and the pattern adroitly lifted from the bottom by means of a small gutta percha suction ball, leaving a distinct representation of itself in the vacuum so caused. After being sufficiently hardened in a stove, the moulds—for many can be operated upon at the same moment—are packed closely together in a large receptacle, which is made air-tight. The fused metal is then poured from the crucible into an easily opened channel of this vessel, and forces itself into every crevice of the moulds, aided in its course by the action of a compressing machine. The moulds are next taken out into the open air and broken with hammers, when there are found imbedded in them a perfect *fac simile* in metal of the different objects originally used as patterns for casting. Even the most minute lines, such as may be seen in engravings or woodcuts, are clearly reproduced. The novelty has this further advantage, that one casting can be used to mould another without any further need for the retention of the original pattern. Medallion making, type casting, and file making are said to be among the developments of the invention, to which much importance is attached, from the cost and toil hitherto attending these processes.—*Manchester Guardian.*

SCIENCE IN ARCHITECTURE.

(Concluded from page 166.)

TIMBER.

With reference to the timbers used in this neighbourhood, spruce from St. John's or Quebec is good bearing timber, but when it does give it breaks clean; it snaps off very short. The fibre of the wood is short. Spruce curves and twists very much, and often the cracks we see in plaster ceilings are to be attributed to the twisting of the joists and spars, and are not the plasterer's fault. On the Eastern coast, Baltic timber has hitherto been used for the purposes for which we use spruce, and now, on account of increased facilities for importing Baltic timber, it is becoming more generally used in Liverpool. Baltic red pine is one of our best bearing timbers, and stands the weather well when used for outside purposes; its fibre is long, and it will bend rather than break quickly. Pitch pine, besides being most useful for finishings, is good for outside purposes, and stands the weather well, but occasionally the hot sun will bring out the resin, which runs down the wood, taking the paint with it: this makes it less desirable, on the whole, for outside purposes than red pine. Baltic white is a very nice wood, and looks well in floors; it is not so good for bearing purposes as the red; the knots in the white are often what are called pin knots, small and black; they dry and drop out. The knots in the red are larger, but sound. Baltic timber is often disfigured by a redundancy of knots: these do not militate against the wood, and often would not appear if the logs were cut up with judgment. A skilful workman can so cut through the knots that they do not show, simply by studying the way they run, and cutting through the feather of them.

Quebec is a superior yellow pine to that from St. John's; in the rough it is clearer, and when cut up is finer looking. If a piece of St. John's yellow pine be rubbed it will occasion a very fleecy surface; that from Quebec has less of this quality, and is often free from it altogether. Good St. John's and Quebec, however, cannot be distinguished by any but experienced judges.

The best Spanish mahogany to specify is that obtained from the city of St. Domingo; this is the most beautifully marked. That from the country of St. Domingo is an inferior sort. The bastard mahogany and the bay-wood are also inferior sorts. The bay-wood, of which we make such use, comes from the Mexican coast.

In French-polishing mahogany, polishers, if not well watched, will often lay a ground of red lead, whiting, and plaster of Paris, then polish on top of this: this makes the work easy, which is otherwise very laborious. It, however, hides a great deal of the ornamental figure, and the polish quickly disappears. If ever this process is detected, the best plan is to have the whole taken off with American potash, and start afresh. Fine polishing is accomplished only by means of laborious rubbing with the different French gums in their proper order, and gradually the whole figuring on the wood becomes developed.

A peculiarity of the poplar wood, that makes it suitable for special purposes, is, that it will not burn; it only smoulders.

In practical joiners' work a great difficulty with men is to get them to bore their work before nailing. I refer principally to framing, and fixing mouldings. It is a little more trouble to bore first, and if men are not constantly reminded, they will neglect this in good joiners' work as well as in common. If there is no bore made first, there is a great tendency for the nail to slip off the stile into the panel, and the result is, if the panel shrinks at all, it takes the moulding with it and leaves a slovenly finish.

Extra attention is becoming necessary to these particulars, for, according to appearances, it is probable the principal work for joiners will eventually be fitting, since all work may in course of time be made by machinery.

At present English machine-work is not of that finish that will admit of its being used universally, but most of the foreign work has a very fine finish, and there is no doubt English machinists will before long be able to equal if not surpass this, and then I cannot see what objection there will be to machine-work generally. At the present time the cost of machine-work is not reduced to what it might be: so much of the tree has to be cut up before a proper grain for machine-work is obtained that considerable waste results. When this difficulty is better understood, and the portions of the timber that cannot be adapted to machine-work more successfully utilised, then the cost will necessarily be reduced. The portions of the tree where the branches unite causing a cross grain interfere now with the successful working of the machines and occasion the waste.

Of those portions of joiners' work that cannot at any time be made cheaper by machinery, the rebated sashes are a good illustration. Although these are frequently made by the machine, the result is not satisfactory; being run in long lengths, they do not cut well for mortising, and there must be a considerable amount of piecing before they are completed: this makes them almost as costly as home-made work, and not so satisfactory.

IRONWORK.

Architects often specify the cold-blast iron, and do not get it. The same with the Low Moor iron.

The Low Moor iron from this country is the best wrought iron we can get; it is an extremely expensive material, being very hard to work; the expense per ton wrought is double the expense of iron wrought from Sheffield, Warrington, the Clyde, or any of the ordinary black countries. I do not think it wise to specify Low Moor in the ordinary way: instead of £24 per ton we may be charged £50, and, after all, not get what we pay for. For most purposes ordinary iron will answer equally with Low Moor, if a little thicker material is used; but where small size is required, and great wearing power, of course Low Moor is best. In bolts, for instance, they do not wear much; if 1 in. of Low Moor iron will be strong enough, then make them of ordinary iron 1¼ in. thick. By specifying these you save the extra charge, besides avoiding the risk of having 1-in. bolts of ordinary iron put into the work, which might prove too weak. Low Moor iron is more malleable and tougher than the other; it has long fibres; the difficulty in severing it is the best means of testing it; its parts have to be literally dragged asunder. Cold-blast iron from the various depôts in Wales is the best class of cast iron; and as it is difficult to drag the Low Moor into pieces, so is it difficult to break this. I have myself broken ordinary pig with one blow from the hammer; but cold-blast iron will sometimes bear twenty blows from a smith without breaking. The difference between cold blast and ordinary cast iron is more easily seen than that between Low Moor and ordinary wrought iron. When cold blast is placed beside common iron it has a bright look, while the common has a dull, dead appearance. But as a rule it takes experienced men to detect these metals from the common iron: it is, therefore, well when they are required for special purposes to specify an amount for them, and take special means to get the work done.

IRONMONGERY.

The numerous qualities of ironmongery fittings necessitate the most careful attention on the part of the architect. As a rule, good class ironmongery may be told by its finish; if the finish of an article is workmanlike and satisfactory, it may generally be concluded that the hidden portion is good; but if there is a rough and uneven finish, a tendency to snip and get out of order, then it is well for the architect to pay attention to the hidden work, as the article is not likely to be first-class. Common sash-fasteners, having an effective appearance, often surprise the house-owner by breaking off when more than ordinary pressure is applied; an examination will usually show these to be of hollow metal instead of solid. If we specify solid articles, and see that we get them, we may be generally assured that the rest of the work is good. In order to secure good locks, bell-pulls, or door furniture, the best plan is to allow a price and arrange specially for the purchase of these articles. Handles coming off is a constant source of annoyance to houseowners, and they take for granted when this occurs the furniture must be jerry, whereas the best furniture is liable to this difficulty, and unless Pitt's or Walker's patents are used, I do not see how, with present appliances, the evil can be altogether avoided.

Bell-hanging is often a source of trouble to the architect. No. 16 copper wire is a good strength, but difference of opinion exists on this point. Fault is sometimes found with the putting two or three wires in one tube; this need be no drawback; the difficulty is when the tubes in which the wires are put are too small; a ⅜ in. tube, or even a ¼ in. tube, will admit of three or four wires working satisfactorily. The cause of bells ceasing to ring properly a few months after the building of a house is often very excusable, though the circumstance in some minds stamps the work as bad. The bells having been put in while the materials of the house are in a green state, they are liable to rust, and in some localities more than in others. The iron portion of the crank rusts and loosens the wires. These, therefore, require a little attention when this occurs, which good bell-hangers are willing to give; indeed, it is well to require bell-hangers always to keep their work in order for six months.

GASFITTING.

A fruitful source of jumping in gas, when there are not the usual irregularities of defective workmanship, is the following:—¼ in. piping is fixed instead of ⅜ in. or wider: the consequence is, when the gas passes through the pipe of the kitchen or other warm apartments it becomes rarified; it then ascends to the colder apartments, and, through having been heated, is condensed into water; it then by its own weight falls down the pipe. If the pipe were wide enough, say ⅜ in. or ½ in. then the volume of water thus formed would, because of its own weight, have sufficient power to pass through the pipe to the proper syphon or meter, where it could be let off at will; but the pipe being only ¼ in., the volume of water thus formed has not sufficient weight to make its own way down the pipe, and the force of the gas coming up is sufficiently strong to show a balance of power, the gas pressing upwards and the water downwards proving in turn the stronger.

On account of this tendency in gas to become rarified in warm apartments, and the more easily condensed into water afterwards, a meter ought never to be placed in a kitchen or other such like place; the colder the apartment the better; the pipe ought never to be less than ⅜in. for the reason named, and even this size without a good fall is liable to occasion jumping. All gas is liable to form into water, as it passes through cold regions it invariably does so to some extent. For this reason large syphons are provided in the streets, and a great deal of water may be seen taken from them at times, being merely condensed gas. All gas is liable to freeze; on being made it passes through water; hence it is damp to begin with. Frozen gas need offer no serious difficulty, if the pipes are large enough, and have a good fall to a syphon. By the application of warmth it will melt into water, and then pass away.

THE MORAL INFLUENCE OF ARCHITECTURE.

Architecture is the one language which every nation can read and understand. People point to literature and say that there is an influence which reaches from the highest to the lowest, but its universal influence is limited by language; to painting, but by its scarcity it influences only the wealthy and the educated; to individual religions, but their influence passes away with the nations that adopt them. Books may be written, yet we are not forced to read them; pictures may be painted, yet we are not forced to look at them; sermons may be preached, yet we are not forced to hear them; but buildings cannot be erected in our midst without our regarding their appearance and meaning, and there they wiss stand, colored by hoary age, exerting an ever present influence; for what a man sees has as much influence on his mind and feelings as the meat he daily eats has upon his body.

Architecture has an influence as ennobling and refreshing on our minds as the advance of spring and summer on our bodies, and this influence is accomplished in as gradual and imperceptible a manner. For whatever attracts attention by its goodness and beauty suggests thought and causes research, and is accordingly a most beneficial and powerful instrument for improvement, since its influence is confined to no one class, but equally benefits all.

On these grounds it behoves those who employ their talents in designing buildings to consider well if the results of their labor will have value for posterity; for in ages to come their work will be the guide to judge of our age, its culture, political, scientific and social education. It must be then highly important for the best interests of the country, that the great amount of talent and energy represented by the number of persons who make their living through the erection of buildings, should be so directed as to produce results of the greatest possible permanent value to the country. The business that our architects really have before them is to solve the problem, how to make the vast collection of dwellings, continually increasing throughout our great country, places where human life may be sustained amidst comfortable, decent, and pleasurable surroundings, so that they give us something in return for the green trees and fields which are laid waste to receive them, so that the surroundings of our own city life, in all its branches, may be made as enlivening, as cheerful, and as beautiful as possible. Let that be the aim of our architects; let them look more to the future, less to past. Many of the errors and the failure of expensive styles come from the habit of assuming that a new building must take a certain outward form or style, instead of considering first what are the requirements and purposes of the building, and what plan will be best to fulfil them, and, secondly, how we may suitably decorate that plan, so as to make it a pleasing and expressive building.

Let not our descendants look at the architecture of our age as at a collection of wild flowers by one who is ignorant of botany, but let them at once get an insight into our history and solial life, and admire out taste, and above all, the utility of our buildings.—*American Builder.*

"THE CONDITION OF DUBLIN."

The above is the heading to a well-written paper which appeared in the columns of our esteemed contemporary the London *Builder* of the 23rd ult. There is very little in the statements made by the writer (is he a Dubliner?) to which we can take exception. The supineness of our citizens and Corporation is dwelt on in no measured or disguised terms. We shall venture to give some few extracts:—

"We are ready to admit, because we cannot deny it, that the Government was never inclined to be so lavish in the distribution of moneys for the carrying out of public works in Ireland, or in the Irish capital, as she has been in London. Probably there is no sane man who carefully thinks over the matter for a moment will wonder why this reluctance to expend Government capital in Ireland has been shown. Without giving it any partisan or political complexion, more than what must of necessity attach itself to it, the case of Ireland for the last thirty years explains and justifies it to the English mind at least.

But here, let us ask before proceeding further, how is it that Dublin neglected to do for itself what Glasgow, without Government aid, has done for itself, or what even Irish Belfast has done, and is at present doing, for itself, in manufacturing and commercial enterprise? Here is a nut to crack, and the noisy disputant who will successfully crack it and digest its kernel will have an answer that will require more than the logic of Locke, or the logic and sophistries of Whately, to overturn. On the threshold of our subject we will illustrate a case in point, which naturally is embraced in our article.

Dublin requires a new bridge over the Liffey, and the widening or remodelling of the present Carlisle Bridge. She also requires that her once noble river, but now foul and open sewer, which flows through her midst, should be purified and prevented from generating disease. On whom devolves, or should devolve, this city improvement? Naturally, one would say, that the corporation of a city are its chief custodians, and that municipal councils are the local parliaments who should govern and improve, as well as collect local revenues. Municipal councils were never intended to be merely rate-levying and tax-collecting juntas. The very spirit of their formation forbids the supposition. They were first founded and established for a more wide and beneficent range of duties, and the sooner they are taught their special duties, and held amenable to the public will, the sooner will the towns and cities they are destroying, instead of governing, manifest a marked improvement. Had the Dublin Corporation done their duty and put their shoulders to the wheel years since, the public scandal now existing in the Irish capital had never been heard of, and the empire would have been spared the childish plea and shameful confession that "the Corporation has no funds, and are unable to build a bridge or even clean the Liffey." The old Corporation of Dublin, which existed before 1841, bad and blameable as it was in many respects, was superior to the present in the conservatism of the city. The old Corporation was charged with being a rotten and a corrupt one; but let us ask what inviolate corporator of the present so-called "reformed Corporation" will stand out from amongst his brethren in the Dublin Council, and say, "My hands are clean; I can cast the first stone." Is it not a fact patent to every sensible Dublin citizen that the Dublin Corporation has been for years a bear-garden, a political spouting-shop, an arena of public partisans and sectarian strife, where the battle of political cliques has been fought, instead of the battle of thorough and authoritative and progressive municipal government?

This has been one of the reasons why the improvement of "the second city in the empire" has been retarded, and the sanitary condition of Dublin is so deplorable and reprehensible. Let us ask, what have been the great public projects carried out by the Corporation of Dublin for the last quarter of a century? With the exception of the waterworks, the Vartry scheme of Sir John Gray—a decided improvement, and a boon to the citizens—certainly, with this exception, the rest of the labours of the municipal council has been very small indeed. What public statues have been erected by their action, of which they can claim the entire credit of the suggestion or completion? What new streets have they constructed, independent of private aid and action? . . . . .

If the local authorities, as represented in the Town Council, are asked to do what is necessary and what ought to be done, the reply vouchsafed is that there are no funds available, or it is "under consideration." We are aware ourselves of crying evils requiring a remedy that have been "under consideration" in the Dublin Corporation for the last quarter of a century, and they are no nearer commencement now than then, judging from appearances. It is a fact that the citizens have been for years over-taxed, and that no end of fruitless and frittering deputations have been sent to London, to the utter waste of public money, and, we are almost tempted to say, for no other reason than to afford some folks an opportunity to "lionise" at the public expense.

Dublin is a city that any corporation ought to be proud to govern, and, if governed with proper municipal spirit, might be for ever a peerless capital, an architectural joy, and a sanitary haven; but, alas! sycophancy, subserviency, snobbishness, and sloth, not on the part of the public at large, but on the part of their municipal tax-masters, have dragged down Dublin nearly to the seedy and slovenly condition of a Slattern of Cities. These are hard words perhaps to write, but they are written to gratify no pique or whim, but written with the honest hope that they may be the means of stimulating a little more vigorous public spirit into the public boards of Dublin, and of moving them to new and fresh efforts towards the improvement of their city. . . . . .

At the weekly meetings of almost every other corporation or local board in the empire, the matters discussed are of a progressive nature,—something relating to the widening or constructing of new streets, the opening of sewers, the utilization of sewage, the projecting of a practical system of drainage, the construction of new bridges and thoroughfares for facilitating the public traffic; but, nine times out of every twelve, the matter of dispute in the City Hall is some religious or party bone of contention, and a party battle for some petty privilege, or in support of some arrogant claim.

How long, let us ask, does it take to erect in Dublin a public statue? Nearly a quarter of a century since a man who was deemed great among his countrymen, and who was honoured by them only as a saint or a king would be. This popular man died. After his burial, a subscription was raised to perpetuate his fame by a monument in the capital of Ireland; but in the Irish capital, with the exception of the mortuary pillar tower that rises above his tomb, no public statue has yet been erected. True, his figure, sculptured in colossal proportions, is to be seen in the Royal Exchange (now City Hall); but it must be remembered that this was the work of Hogan, the sculptor, during the tribune's lifetime. There is talk enough, goodness knows, about the statue, its artist, and its intended site, but it is not yet erected.

And here is the subject of Carlisle Bridge, and its rebuilding or remodelling. The vacillating Council who, we are sorry to say, municipally misgovern Dublin, cannot be pushed into action over the matter. That a bridge requires to be built to afford more space and freedom for public traffic, admits of no question. If funds cannot be raised without difficulty, why the present structure can be widened, and a very good design has been submitted to that end. . . . . .

Now, as to the purification of the Liffey, this is a matter that requires instant attention. Numerous plans have been submitted, and some soft heads have gone bewildered in contact with them. Any system of purification which has been proposed, no matter how short it might fall of the required ends, would be a relief; but between the advocates on one side in favour of their own hobby and that of their friends, and the opponents on the other side, in favour of theirs, the Liffey is seething and sinking deeper into the condition of a chronic cesspool.

It is difficult for serious and sober sanitary reformers to discuss, with common respect, some of the plans proposed for improving the foul condition of the Liffey. One or two proposals deserve consideration, but there are others which, if not utterly ridiculous, are at least of no practical use. . . . . .

Putting aside other plans, we boldly say there is no salvation for Dublin but a thorough system of parallel main drainage and intercepting sewers on both sides of the river. Until the river is saved from city sewage pollution, on its north and south banks, there can be no proper purification of the Liffey. The treatment of the sewage or its final distribution is another question for which more than one method can be adopted, as it so pleases those whose chief business it will be to carry it out with profit and advantage to the city and the country at large.

The Poddle River, rushing ever, and emptying hourly its avalanches of solid slime into the Liffey, in the most central part of the city, is a frightful picture to contemplate. What it was a quarter of a century since, "a mother of dead dogs," night soil, and butcher-shambles offal, it is still, but twice multiplied in beastly enormity. Is it possible that the corporate authorities of Dublin can pretend to an ignorance of this frightful *cloaca* of rolling filth, that passes but a few yards off, almost under their very noses, while sitting in their Town Councils? The effluvium of the Poddle wriggles up through the street sewers, and the malaria of the Liffey is daily wafted up Parliament-street to the City Hall, acting as a due monitor and an avenger of corporate negligence and imbecility.

North and south of the city there are districts that never see the light of a scavenger-cart, and the water-cart is only reserved for fashionable quarters, where noses are not composed of plebeian india-rubber, and broadcloth is preferred to corduroy. When the cleansing of the city was done by contract a few years ago—at a time, we mean, when it was well paid for—it was done well; but if it be true that the Corporation does it now on more economical principles, on the old Hibernian principle of "Do it yourself and save the halfpenny," then we can understand why Grafton-street and Nassau-street on wet days are streets of a thousand pools, and why Sackville-street and Britain-street follow the bad suit."

THE SURPLUS FUNDS OF BELFAST EXHIBITION.

No small amount of indignation has been raised against the Executive Committee for the strange way in which they appropriated nearly the entire surplus arising from the recent exhibition amongst their own members. The reports of some of their meetings are given on another page. Mr. Kirkpatrick, foreman printer in the *Whig* (hon. sec.) has been favored with £200. The Chairman of the Working Men's Committee, £50; the sum of £150 has been voted to the Belfast General Hospital, in the names of three members of the Working Men's Committee, each of whom is thereby constituted a Life Governor! Then we have £50 to the "Working Men's Institute and Temperance Hall." To defray the expenses of eleven workmen to and from the London Exhibition a sum of £100 is set aside. After all these *very liberal* expenditures, the balance (if any!) is to go towards the support of the School of Art recently set on foot. Had the entire surplus been devoted to the School of Art, or some other equally useful purpose, it would have been highly creditable to Belfast. We must say that the manner in which it has been disposed of exhibits extreme selfishness, and may be taken as a specimen of the intellectual capacity of the Executive Committee. The "queries" to be answered by the eleven workmen on their return from London are before us; their composition would be excusable, perhaps, if produced by a village schoolboy. Here they are:—

> "It is a condition of your going to London that you will, as soon as possible, after you return to Belfast, place in the hands of Mr. Kirkpatrick, the Secretary of the Local Exhibition, your opinions on the following queries:—
>
> 1.—Having intermingled, as far as possible with foreign workmen, you will state some of the leading features, in your branch of business, on foreign work which you consider to be improvements. What are they?
>
> 2.—In the mechanical labour, in the manufacture of linen, and in other departments specially of importance to the North of Ireland, you will state your views as to the source of present successful Continental competition. Is it the low price of labour? The hours of labour? Is it the character of the workmanship? Is it superior skill?
>
> 3.—You are requested to state in what respects, in your trade, by the adoption of new materials and principles, the Belfast workman is behind the foreign workman, if you consider him to be behind.
>
> 4.—As a school of art is about to be organised in Belfast you may have opportunities of deriving information as to the working of these institutions on the Continent, and the views you may have received on the subject are requested.
>
> 5.—What is your opinion on the general tendency of these exhibitions to promote the cause of labour, and to improve a taste for science, industry, and art?"

THE MAIN DRAINAGE OF THE CITY.

GOVERNMENT has consented, after some pressure, to *lend* the citizens of Dublin £300,000 for the purpose of *making an attempt* at carrying out a system of main drainage and the purification of the Liffey. The scheme which our sage corporators are likely to adopt is that proposed by Mr. Bazalgette and Mr. Parke Neville. By means of large sewers—the two principal ones to be parallel to the river and beneath the quays—the entire drainage of the city and suburbs is to be received and conducted outside the urban limits. Portions of the sewage will be collected from high levels, and will, by the mere force of gravity, flow to a considerable distance from the city; but the greater portion of the sewage will have to be pumped up to a certain height, from which it will be allowed to flow away into the country.

The great majority of our readers are aware that the River Liffey, which bisects the city of Dublin, receives into its muddy waters the drainage of the city and its immediate suburbs, the population of which is probably about 300,000. It is not easy to realize the extent of the injury to human life and health produced by the emanations from an open sewer containing the effete matters from 300,000 persons—for an open sewer the Liffey undoubtedly is!

On July the First, 1869, when writing on the "Liffey Nuisance," we said—"Summer again, and still the 'sweet waters' of Anna Liffey flow on between their granite boundaries, dispensing around their malaria-laden vapours." At that time we recorded that "John Smith, Esq.," was, at a meeting of the Corporation, "ordered and instructed" "to take all *necessary* steps for the accomplishment of this *much-desired* object." The heat of the present summer exceeds by many degrees that of last year; the Liffey, as might be expected, has lost none of its unpleasant odour; "John Smith, Esq.," is again "ordered and directed to take all *necessary* steps." We dare not prophesy what will be our probable state this time next year; the Liffey may be *pure*, or it may be found in a still more filthy condition; in the latter case an opportunity may be afforded for an excited mob to carry out a threat suggested as punishment for civic functionaries, viz., to

. . . . "Give them a dip
In the odorous stream only up to their lip."

But to be serious in the matter. We would once more urge, before any final steps are taken in this movement (which will still further tax this already overburdened city) that a review and scrutiny of some of the more *economic* and *feasible* plans sent in or proposed *should be insisted upon.* Several of these have already been noticed in this journal.

Mr. William Swift, of Harold's Cross, has directed our attention to his plan for the formation of intercepting sewers, which he says could be carried out within the river walls, and with very little interference with the roadways along the line of quays. He proposes to construct, parallel to the base of the wall of the quays from King's Bridge to Carlisle Bridge, a main sewer of inverted arches, constructed of fire brick and cement, said sewer not to be less than 7 ft. high internally. At each bridge man-holes to be formed, and provision made for ventilation. For the purpose of flushing there would be reservoirs formed by piling the river above the entrance to the sewers for about 90 ft., at an angle of 27°; each reservoir to hold 300,000 gallons of water, and sufficient to flush the main sewer every six hours if necessary. Cast iron pipes of sufficient bore to be laid from Carlisle Bridge to the North Wall and Ringsend, and from these points across the river to the North Bull, where a large receiving tank could be constructed. Mr. Swift has prepared rough models and diagrams, which sufficiently convey his ideas. They can be seen daily at 9, Trinity-street. He calculates that a little over £100,000 would be sufficient for the carrying out of his plan.

We shall wind up this paper with a summary of what occurred on Monday, at a meeting of the Corporation:—

> The Lord Mayor said the Council would naturally be anxious to know something of the deputation which they had sent to London, with reference to the main drainage of the city. They had had a very lengthened interview with the Lord Lieutenant and Mr. Fortescue, before whom they had laid their claim in the strongest possible way, and they had satisfied them of the advantage that would be conferred on the city—in fact, of the *absolute necessity* that such a work should be taken in hands *immediately*. They had prepared a very lengthened statement to submit to Mr. Lowe. It was not necessary for him to go into all the details, for it would take a considerable time to do so; but a report would be laid before them, which was in course of preparation, and which he thought would be satisfactory to the members of the House. The result of the deputation was that they would get £300,000 from the Government, on the same terms as a similar loan had been granted to London.
>
> Mr. Byrne—Have you got the same terms that the Government gave to the London Main Drainage?
>
> The Lord Mayor said they had; they did not ask anything more, and would not be satisfied with anything less. Possibly they did not actually require so much as £300,000; but *it was necessary to have a margin.*
>
> Mr. French said he wished them joy of the balance that would be left! It would be like the Vartry.
>
> The Lord Mayor said that, at all events, he had been anxious to mention the success that the deputation had met with. He believed that this day a bill would be printed, and brought before the House this evening, and he believed that before the expiration of the present week it would become law. With reference to the opinion of the citizens of Dublin, they had been very much pressed upon that subject, and the best answer he had been able to give them was that a requisition had been forwarded to him, signed by upwards of 370 inhabitants of both sides of the quays, who were the principal sufferers from the present state of things, and who, he was sure, expressed the opinion of the citizens upon the subject. He hoped the citizens would now be satisfied that the Corporation had *done the right thing.*

ENORMOUS STEEL CASTING.

THERE was on Tuesday cast, with the most complete success, at Messrs. Firth and Sons' famous works, Sheffield, one of the largest blocks of steel ever cast in this country. It is intended, we believe, to form the shaft of the screw of the Dublin Steam Company's vessel, Munster, is about 15 feet in length by nearly 4 feet in diameter; and weighs 15 tons. For some days most elaborate preparations for the operations had been made. The work of melting the steel commenced about eight o'clock, in no fewer than 544 crucibles, each containing 64 lbs.—the total quantity thus being 34,816 lbs., or 15 tons 3 qrs. 12 lbs. About half-past twelve o'clock the work of casting commenced, and was a complete mechanical as well as scientific triumph. With 544 crucibles to empty into one mould, the difficulty of procuring a steady flow of metal at an equal temperature, was, as may be imagined, very great; but so admirable were the arrangements—and so enthusiastic was the interest which the workmen individually took in the process—that in half an hour it was triumphantly accomplished, without the slightest flaw or accident. The scene was a striking illustration of the order and method which should ever prevail in a large establishment. The motto of those in charge was evidently "A place for every man, and every man in his place." Silently and almost noiselessly, the stream of workmen approached with the crucibles, and as silently retired in the opposite direction when the mould had received the appointed quantity of molten metal, till one could not resist the idea that he saw before him the results of almost military training. No battalion of French or Prussians could have performed their dangerous and fatiguing task with more steadiness, precision, and care. Descending to the subterranean part of the workshop, where the iron mould stood free, the effect was grand in the extreme. The mould—which was about 4 feet in diameter—had of course been heated by the steel to a brilliant white; and the mighty mass of glowing metal, in such a strange and cavernous place, looked in very truth like "a pillar of Pandemonium." A popular idea of the magnitude of the casting may be realised when we state that some ten or twelve years ago the correct casting of an ingot of 15 cwt. of crucible steel was considered as great a triumph as that of 15 tons now is! The weight of an ordinary crucible steel ingot is only about 45 lbs.—between which and 15 tons there is a slight difference. There were nearly 300 men engaged in the work of casting.—*Sheffield Telegraph.*

THE LIGHT AND AIR QUESTION.

ROLLS COURT.

John Robb and Alex. Reid v. *James Connor*—This was an application that defendant may be restrained from erecting or constructing a proposed building, or any building whatsoever, upon a piece of land in his possession in the new street between Castle-place and Rosemary-street, Belfast, so as to darken, injure, or obstruct the free access of light and air to the ancient windows of the plaintiffs; and that the defendant may be restrained from permitting to remain such portion of his said building as has been already built, and darkens and injures, or obstructs, such free access of light to the said windows. The plaintiffs are haberdashers and vendors of fancy goods in Belfast, and the defendant is a builder resident in Belfast. The present motion is merely of a preliminary character, as the case will be fully argued next November term.

Mr. Palles, Q.C., with whom was Mr. W. R. Bruce (instructed by Mr. J. C. Smyth) appeared for the plaintiffs.

Mr. Law, Q.C., with whom was Mr. W. D. Andrews (instructed by Messrs. Wallace and Co.) were heard on behalf of the defendant.

The Master of the Rolls said the case was one of considerable importance, and some serious questions would, no doubt, arise on the hearing. Acting on the rule laid down by Lord Justice Turner, and without going into the details of the evidence, he was satisfied that the plaintiffs had failed to show that the balance of inconvenience was such that the court ought to grant the injunction. He would, therefore, make no rule as to that, but let the motion stand for the hearing, lest it might be taken for an intimation of opinion by the court that the plaintiffs had no case. There was a considerable amount of contradictory evidence, and he was not to be taken as saying the plaintiffs could sustain a case on the hearing; and if the new building complained of had obstructed the ancient lights of the plaintiffs, there was no doubt the building was allowed to go on to a height of 50 feet before any remedy was sought. That was a very important consideration, and was, no doubt, a source of great inconvenience to the defendant. He would, therefore, let the motion stand until the hearing. With respect to the part of the motion as to a mandatory injunction, that was plainly an oversight. The whole motion, therefore, should stand until the hearing, the defendant undertaking to abide any order the court might make.

Mr. Law, Q.C., said the defendant had no objection whatever to the ruling his lordship had made. He suggested the court should reserve the costs as a separate consideration.

The Master of the Rolls—Most unquestionably.

MISCELLANEOUS.

Belfast and North of Ireland Workmen's Exhibition.—A meeting of the Executive Committee was held on the 21st ult., in the Town Hall, Belfast—the Mayor (Dr. Browne) presiding. There were also present—Dr. Moore, F. D. Finlay, Esq.; George Horner, Esq.; W. D. Cramp, Esq.; Wm. Spackman, Esq.; Messrs. D. Pettigrew, J. Cappo, Thomas Brown, John Reid, J. M'Gennetty, and William Kirkpatrick. The minutes of the previous meeting were read and confirmed. The secretary read the minutes of two meetings of the Working Men's Committee, held on 9th and 16th ult., in which the working men recommended the Executive Committee to allot £50 of the surplus funds to the Working Men's Institute, £100 towards defraying the expenses of a number of workmen to be selected from the Working Men's Committee, to London, and the remaining surplus to be devoted to the purchase of examples and models for the new School of Art now in course of formation. On the motion of Mr. Cramp, seconded by Mr. Spackman, the recommendation was confirmed The Secretary reported that the following representatives of various branches of trade had been selected as the parties to be sent to the Workmen's International Exhibition in London:—Messrs. Chas. M'Pherson, Wm. Bell. W. Porter, Joel Holden, Arthur Galloway, E. Clancy, J. Cappo, T. Brown, J. F. Brock, John Reid, and Robert Simms. The Mayor said that he was well acquainted with all the gentlemen selected, and he had pleasure in moving that the recommendation be confirmed. The Mayor's motion was seconded by Mr. Horner, supported by Dr. Moore and other members of the committee, and adopted unanimously. A number of queries, which the delegates are expected to answer in writing on their return from London, having been drawn up by a sub-committee, consisting of Messrs. Bean, Cairns, Nelson, and Brock, were adopted, and each delegate ordered to be supplied with a copy. On the motion of Mr. Horner, seconded by Mr. Cramp, Messrs M'Calmont and Hagan were requested to audit the accounts and prepare a balance sheet before next meeting of committee. The minutes of the last meeting of the Working Men's Committee contained the following resolutions—Proposed by Mr. Brennan, seconded by Mr. Bean, and resolved—"That the warmest thanks of the Working Men's Committee are due, and hereby given, to the Hon. Secretary, Mr. W. Kirkpatrick, for his labour in promoting and carrying out to a termination the first Workmen's Exhibition held in Ireland." Proposed by Mr. Hagan, seconded by Mr. Bell—"That the best thanks of the committee, as well as the working classes of Belfast, be tendered to his Worship the Mayor (Dr. Browne), Chairman, Mr. W. Girdwood, Deputy-Chairman, and the gentlemen composing the Executive Committee, for their great services towards the Belfast Exhibition, and the interest they manifested in the advancement of the artisans of Belfast" Proposed by Mr. Kelly, seconded by Mr Bean—"That the thanks of the committee are also due to Mr. D. Pettigrew for so ably presiding as chairman at their meetings for the last eight months."

Asphalte Paving in London.—At a meeeting of the City Commissioners of Sewers, held on Tuesday last, the streets committee brought up a report on the use of asphalte for paving in the City. In it they stated that they had had under consideration the application from the "Val de Travers Asphalte Company," referring to the pavement laid down by them experimentally in Threadneedle-street, and asking the judgment of the Court thereon, and that they might have the order to pave with their asphalte some of the streets within the City which were to be repaved this year. They had directed the engineer (Mr. Wm. Haywood) to report on the subject, and they had come to the conclusion that it was desirable to make a considerably extended trial of the pavement in a line of street having great traffic, and to recommend that Cheapside and the Poultry should be paved forthwith. The cost would be 18s. per square yard with the granite foundations, and for keeping in repair 1s. 6d. per yard per annum, the company undertaking that at the expiration of the period the pavement should be in as good condition as when first laid. Acting on the recommendations of the committee and the engineer, the commission unanimously decided to allow the company to pave Cheapside and the Poultry, and gave instructions for the immediate execution of the work.

The Poet, Thomas Moore.—The *Wexford People* informs us that a meeting of the "friends and admirers" of the late Thomas Moore was held in that town on the 13th ult., when it was resolved—That a subscription list be opened for the purpose of purchasing the house in Corn-market, in which the parents and maternal ancestors of the poet resided, and in which he was begotten, and spent the first twelve years of his life; and also to secure all "relics" still extant and accessible in Wexford and elewhere, which can be identified as connected with the house, the family, and the man—as a memorial of our National Bard.

A house that has just been built in New York with all the modern improvements, has a billiard table in the basement, a bowling alley in the cellar, and a croquet ground beautifully fitted up in the attic.

The parish church of Aghadowey, diocese of Derry, is to be considerably enlarged and improved, from designs by Mr. J. G. Ferguson, Derry.

A project is again on foot for the promotion of a railway from Galway to Clifden. At a public meeting held at the Court House, Galway, on Wednesday last, Mr. Roberts, C.E., stated that when the project was first spoken of in 1861 the cost was calculated at £200,000, but that now, in consequence of the many improvements in the construction of railways, it would cost little over the half of that sum.

Chatham Dockyard Extension Works.—The Director of Works of the Navy has selected Harding's Flexible Roofing for covering the whole of the erections (order No. 611) on these works, owing to the satisfaction given by that supplied to the same yard about three years since. Samples &c., at 20 Nicholas-lane, London, E.C.

A person who was once a gardener is now practising in Yorkshire as an architect, in which profession he obtains as many engagements as he can fulfill. The same individual has a pride in saying that he reckons "nowt" about the orders of architects (*sic*), and would not give a "toss" for a man who was unable to put something new in every job he got.

Improvements in Belmullet.—With great pleasure we (*Tyrawly Herald*) observe that a taste for improvement has at length set in among our merchants. *Bryan Carey, Esq.*, has set the example by having his shop-front beautifully *artifically*, and *tastely* designed! The work has been performed by a Mr. Wood from Dublin and does him credit, Mr. Carey's shop, both inside and outside is a model for others of our townsmen to go and do likewise. Mr. Anthony Donohoe is also preparing his establishment in a manner befitting this progressive age; we trust we shall have the great pleasure of recording future progress as to taste and display among our townsmen.

Sea Bathing at Holywood, Co. Down.—A capacious, simple, and inexpensive bathing galley is about to be erected at Holywood It will be placed at about 300 feet from the shore, and will be approached by a gangway with a handrail. It will entirely supersede both in simplicity and convenience anything hitherto adopted. Although on a somewhat extensive scale, the whole of the material can be easily removed to be stowed away during the winter season. The plan is by Mr. James Kendall, Engineer, Holywood and Belfast.

TENDERS.

For the erection of Swilly House, Fahan, Co. Donegal, for D. M. Colquhoun, Esq. Messrs. Turner and Williamson, architects. Grates and mantels, hardware and plate-glass supplied by proprietor:—

Doherty	£2,300	0	0
M'Clelland	2,239	0	0
G. and R. Ferguson	2,133	10	

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We have to acknowledge, amongst our "Exchanges," the monthly parts of *The American Builder* up to current number, for which we beg to thank the Publisher.

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F. W., Carrickfergus.—We have a few copies of back numbers. We can supply any you require to perfect volumes.

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The Irish Builder.

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The Crosshaven Church Building Case.

FROM the extreme south of Ireland comes to us the report of another of these legal duels with which we are becoming, unfortunately, too familiar,—a suit at law instituted by a contractor against a Catholic clergyman, to recover for the value of extra work done in erecting a church at Crosshaven, that charming watering-place near the mouth of Cork harbour. Elsewhere we report as much of the case as our limited space will permit. The plaintiff was Mr. Richard Evans, the well-known and eminent building contractor, of Cork, and the defendant was the Very Rev. Canon M'Swiney, P.P.

It appears that the rev. gentleman, having secured the services of Mr. E. Welby Pugin to design his church, employed Messrs. Gribbon and Cleere, surveyors, of Dublin, to prepare the bill of quantities. There was no specification, but the description of the work was given in notes on the drawings. The quantities were issued by defendant to intending competitors. Five tenders were submitted, and that of Mr. Evans, being the lowest, was accepted. The works immediately commenced, and the "ceremony of laying the foundation-stone" (as recorded in this journal at the time) was performed by the Catholic Bishop of Cork with great *eclat*, in the presence of an admiring multitude.

The contractor considered himself a happy man, and forthwith proceeded to accumulate on the site all and every the necessary materials, plant and men, to prosecute with vigour the erection of a structure which was to record in future ages the piety of the Celt, and commemorate at once the genius of the artist and the skill of the contractor. In fact, to employ a now rather hackneyed quotation, "all went as merry as a marriage bell"; and when he (the contractor) thought —"good easy man, full surely now his greatness was a-ripening"—he omitted to take into consideration the fact that the architect aforesaid had, as a representative in Ireland, a certain Mr. Barnett, who undertook to describe, in the following language, the manner in which the external faces of the walls were to be finished:—The said walls being previously specified to be built of "rubble masonry of *local stone*," faced with hammer-dressed limestone, in random courses, varying from 4 in. to 8 in. in height, pitched from the joints, and well bonded with the rubble backing. The builder, being a native of Cork, took what the *Times* would call an "essentially Irish" view of this, whereas it would now appear he should have considered it from a different stand-point; in fact, he ignorantly supposed that "hammer-dressed stone" meant stone prepared *with a hammer*, and that "random courses," if it meant anything—which we strongly suspect it does not —indicated that the work was to be made up at "random" in courses of unlimited extent, provided that the individual stones varied in height between the required dimensions. Eight of the principal architects and builders in Cork, and the surveyor, coincided with Mr. Evans in his interpretation of the specification; and even the architect's manager, while maintaining his own view, "believes that Mr. Evans did not understand this particular item of the specification"—that is, we suppose, didn't understand the meaning which he wished should attach to the language in question. By "hammer-dressed" stone he should have understood "squared ashlar, with chiselled joints and beds"; and by "random" he ought to know that "regular courses"—each course carried at a uniform height all round the building—was clearly intended.

As a general rule, we may say that it is not safe to assume a "case proven" until both sides of the argument have been considered. Let us, therefore, see how the defendant in the present instance has been sustained by independent evidence. He produces Messrs. Walker and Kenefick, no doubt very respectable and experienced men, and both competitors for this very work. Singular to say, both *exactly took* the *same* view of the specification as Mr. Barnett. Both had intended to have executed the work in the manner required; and, what is still more singular, both state that they had down in their estimates precisely the same price per yard superficial, viz., 4s. But then, unfortunately, this last fact, the price of the work, is most damaging as regards the value of their evidence, because common sense would lead us to the conclusion that so many witnesses of respectability, who have sworn that the work done is cheap at 15s., could not have committed so very gross an error in their calculations; and this is borne out from our own knowledge of what it costs to prepare limestone ashlar in other parts of the country. We presume there are not any very great advantages as regards the economy of working belonging exclusively to the Cork limestone.

As regards Messrs. Cockburn and Dudgeon, their evidence cannot be considered of much weight, as neither had seen the work done, and both are strangers to the locality, a knowledge of which would, in our opinion, be essential to the correct estimating of the value of such work. Their *reading* of the specification is a mere matter of opinion with which, as before stated, all the local men disagree. What appears very strange in this case is, the conduct of the architect. The plaintiff says "he decided I was right." "Oh! no," says the defendant, "he only said you were right in saying the stones were chiselled. It was surely the duty of this gentleman to have given a decision in a way that would have put the matter beyond doubt, and probably have prevented this lawsuit. His offer to the contractor to simplify the class of work and increase the price shews beyond doubt that he considered the plaintiff was right; and it is a great misfortune that the arbitrament of the question could not have been left to him, as he proposed it should be—an offer that was readily accepted by the contractor, but rejected by defendant, who would not abide by the decision of his own architect.

Altogether this trial presents several peculiarities, and the moral to be deduced from it is one which we have exhausted every argument in the endeavour to bring home to the minds of our readers—the necessity of some united action on the part of builders to establish an association to protect their interests, to regulate their movements, and settle on a proper and uniform basis such vexed questions as that which has given rise to the present action. It also shows the gross absurdity of submitting to the decision of a law court questions which neither judges nor juries can or ever will understand; and how desirable it is that a court for the exclusive trial of "building cases" and the like should be established, in which the judge, if not an architect, should at least be assisted on the bench by one or two assessors, who would be professional men, selected from the ranks of the architects, engineers, or contractors, as the case might require, and to whom an unfortunate suitor might look with some degree of confidence. Until such an arrangement can be made, the next best thing to do is to settle such matters by arbitration. This course the plaintiff in the present case was most anxious for, and the other side, too, professes to have been so, but evidently without any real desire for so sensible an arrangement, inasmuch as by the memorandum of agreement prepared by the solicitors, he would virtually have the contractor admit that he had no claim for an extra, which he considered he had. This would, in fact, be deciding the case off-hand, by at once abandoning the very grounds on which the arbitrators were to adjudicate.

With reference to the item of excavation, which contractor priced at 6d. per yard, supposing it would have been in earth, and which had afterwards to be done in rock, we are constrained to say, that we do not envy those witnesses the possession of a mind that can be brought—for the sake of helping out the cause they have espoused—to aid in perpetrating a most flagrant piece of injustice, unwarranted by the contract, and an outrage on common sense.

As the matter now stands, the very rev. defendant has secured a verdict, to which, we believe, he was not entitled, either on the merits of the case or in equity; and the plaintiff is mulcted in heavy costs. *Legally*, the case may be settled to Mr. M'Swiney's satisfaction, and he will no doubt congratulate himself on having achieved a triumph; but morally, we are convinced, he is as much a debtor to the plaintiff as if no such decision had been arrived at, and is bound to make restitution to Mr. Evans, not only for the proper value of the work done, but also for all other losses he has caused him, and for the profits which might have accrued from the fulfilment of the contract.

IRELAND IN THE WORKING MEN'S INTERNATIONAL EXHIBITION.

SPECIAL NOTICE.

The different articles exhibited in the Belfast section are still continuing to attract much attention. Surprise is expressed that the capital of Ireland is scarcely represented in any branch. We feel almost ashamed ourselves of the fact, and we confess we do not know of any valid reason that can be advanced, save one, why Dublin has not put in an appearance at the Workmen's International Exhibition. If the Irish capital could not exhibit in machinery or in linens, she could at all events have shown the constructive capacity of her workmen in railway carriages, gentlemen's coaches and carriages, cabinet furniture, bell founding, agricultural implements, and, like Belfast with her linens, could not Dublin have made a fair show of her poplins and tabinets? It were much to be desired that she had done something more. It is not yet too late. Goods would still be received if any strong desire were manifested to obtain a place for their exhibition at the Agricultural Hall. Having said so much by way of preliminary, we shall continue our notice.

A very neat and well-made piece of mechanism is shown in "Strangman's improved Flyer Eye Machine." This is simply a machine intended for turning the eyes of flyers used in the spinning and twisting of flax, hemp, cotton, &c. The inventor, Mr. J. Scott, is a foreman mechanic in Mountain Mills, near Belfast. It was constructed in his working hours, so to the kindness of his employer he is indebted for its successful completion and exhibition. If a similar feeling actuated other employers of skilled labor, workmen inventors would be more often in the field.

Mr. Richard Brady, of Belfast, has a model, full size, of a new plan for revolving shutters, adapted for shop fronts, assembly-rooms, library cases, drawing-rooms, theatres, and a variety of other purposes. The principle is by a weight and chain; the action is smooth; and, from what we have examined, we think Mr. Brady's plan is quite practical, economical, and useful, and would be found to answer in many situations. The model he exhibits is well put together, and can be understood by a child.

Two models for fire-escapes are shown; the principal one, on a new principle, is by Mr. Bruntz, of the firm of Messrs. Talbot and Dixon, Derry. Mr. Bruntz's is a portable fire-escape, and can be packed in a small box. It presents an iron frame about 12 in. by 6 in.; a screw power is attached, which secures it to the floor; then there is a windlass roller and tackle, a rope and canvas car for the persons escaping, with a person in charge of the rope. The weight of the individual descending brings the car and its occupant to the ground. By a wheel with teeth at the end of the roller a check can be given to a too sudden descent. The rope can be of any length, to answer any height. There is a danger, however, in case of external flames setting fire to the rope. A guy, or guiding rope, could be attached to keep the descending person from contact with the front of the burning house. This fire-escape certainly possesses advantages: it is simple, ingenious, and, if used in the first stages of the conflagration, it would be found to do its work most effectively. We hear that the inventor intends to patent his invention. We wish him every success.

Mr. Jas. Stanmers, builder, Carrickfergus, exhibits a small model (one-sixth scale) of a smaller fire-escape. It is ingenious, and, if tried upon a large scale, might be found to possess some advantages. It is intended to rise from 8 or 10 ft. to 50 ft.

In the matter of fire-arms and other military weapons, Mr. John Girvan, farmer, of Carnduff, exhibits a breech-loading rifle, cannon, and model of improved projectile; also a breech-loading small arm rifle and improved cartridge, accompanied with a drawing. He also shows a model feathering paddle-wheel. Mr. Girvan's small breech-loading rifle is a well-finished piece of skilled workmanship; and though not the work of a practical gunmaker—that is, a gunmaker by trade, yet it is extremely well finished in stock and barrel. The maker shows his capacity to use the lathe, the anvil, and vice, as well as implements of the farm field. Concerning the breech-loading rifle, cannon, and arms, and projectiles in general, the Admiralty and War Office favoured Mr. Girvan with a very courteous letter, and acknowledged his ingenuity; but the Irish farmer and inventor, of Carnduff, is likely to hear no more from either the Admiralty or the Horse Guards. Perhaps he may see his invention, with some modifications, in use before he dies, but for the present he must rest content with "honourable mention." Had John Girvan, farmer, been born into the circle of the Tomnoddys or Dundrearys, he might have had the honour of an introduction into the armouries of the Whitworth and Armstrong; but being a *mere* Irishman, the Admiralty and their protégés think it is sufficient to say—"Declined with thanks."

How is it that Paddy's bump of constructiveness is so highly developed?—there is no keeping it within reasonable bounds. In ornamental japanned work, or sheet iron in black and green, Mr. Thomas Smyth, of Lagan-street, Belfast, exhibits some beautiful specimens. One of these is really admirable, and deserving attention.

Mr. William Gibson, of Belfast, gives us some first-rate carvings and designs in bog oak ornaments, but we have already alluded to them.

In the same line Mr. John Jacques, of Dublin, shows a very attractive case of highly finished bog oak ornaments, among which the national emblems are conspicuous. We have ruined abbeys and round towers, shamrocks, harps, and wolf dogs, mountain fern, acorns, and other things. Mr. Jacques' collection is excellent, and he sustains the old repute of his family in Dublin as a race of carvers. We may add here that Mr. Jacques is the only *de facto* Dublin exhibitor in the exhibition entitled to stand in the *bonâ fide* character of employer and skilled workman. We thought the Messrs. Goggin, of Grafton-street, would have put in an appearance; but Gibson and Jacques, of Belfast and Dublin, are the only bog oak exhibitors. We trust that their public spirit will redound to their profit as well as their credit.

Pelling and Co., of Belfast, shew a fair quantity of superior sewed muslins and embroidery, which are attracting much attention on the part of lady visitors. It is to be hoped that they will be influenced from what they see accomplished by the lowly of their own sex in this interesting trade to purchase, and thereby encourage a most deserving branch of Irish native industry.

The Misses E. and M. Callwell, teachers, show respectively a white cotton crochet quilt and an antimacassor; both are admirably worked, and as specimens of hand labor are deserving of the highest praise.

Mr. John Armstrong, of Dungannon, exhibits a casket in bog oak, and ditto in alder-wood; both shew a profusion of carved work externally. The casket of bog oak shews raised carved work on the lid representing the shamrock, rose, and thistle cleanly and accurately cut. The alderwood designs and carvings are also chaste and good. The Star of Bethlehem is shewn on the latter casket, within a wreath, the work of knife and chisel. Mr. Armstrong has evidenced the possession of much taste both in design and execution.

The Messrs. Dunville stand alone among the distillers of Great Britain as exhibitors of their celebrated whiskies, now becoming so popular in England. They exhibit in a large and very handsome case a fine selection of bottled "native" with beautiful labelling and coverings. They also shew a splendid finished oaken cask with stand; the cask is a most ornamental one, highly polished, and with silver hooping. It is as chastely finished as a piece of drawing-room cabinet work. As to the qualities of the whiskies "in bottle" we would be better able to speak if they were on draught, but we have little doubt that what is in case is quite as good as what their civil "commercials" in London give you to taste as "samples." The Dunvilles of Belfast have exhibited great energy in the pushing of their trade, and they lose no opportunity that presents itself for extending it. As employers of labour, they expend a large amount of money in building, cooperage, printing, and other trades incidental to the carrying on of their extensive distillery in Belfast. We are glad to see them in the Agricultural Hall as exhibitors.

The Irish Industrial Depository of Grafton-street and the Crystal Palace shew, through their London agent, George Smith, a fine selection of Irish lace, crochet, satin, and guipures, lace shawls, cuffs, handkerchiefs, and a variety of articles of ladies' wearing apparel of the ornamental description. Those on show are extremely rich in design and execution, and have attracted and are attracting a good deal of notice from lady visitors. A little encouragement would lift this interesting trade into more life, and afford employment to thousands of poor peasant girls who sadly stand in need of honest industrial occupation.

We have much more to notice connected with Ireland and outside of a general interest to the public and our readers, but we must reserve notice until our next issue. In the meantime we hope that some more accessions will be added in the name of Ireland, and of Dublin in particular. If so, though the exhibitors be too late to appear in the catalogue or have a proper place assigned to them, they shall not, we promise, be passed over or unnoticed in the IRISH BUILDER.

STAINED GLASS AT ST. PETER AND ST. PAUL'S, CORK.

THERE is at present on view at the Edinburgh and Leith Stained Glass Works, Leith, a series of windows, just executed by Mr. Barnett for the church of St. Peter and St. Paul, Cork. The windows are four in number, each consisting of two lights, with tracery above; and, with a fifth window which has already been placed, will complete the apsidal chancel for which they are intended. Each light is designed, so to speak, in five stages. In the lowest is a panel containing the figure of an angel displaying a scroll; next comes the full-length figure of a saint; then another panel, with an angel; over that a second full length figure; and, finally, a third angel, occupying a panel in the cuspheaded top. The work throughout is ruby glass, variegated with conventional foliage, the latter being supported from stalks which run up the sides of the lights; and, with their twisting and interlacing, define the various stages and panels. The full-length figures, numbering sixteen in all, comprise the four doctors,—Jerome, Gregory, Ambrose, and Agustine,—with twelve celebrated saints. Each is represented standing in a foliated niche, the attributes by which they are respectively distinguished being indicated. The tracery forming the head of each window consists of two quatrefoils and a large multifoil. The multifoils are occupied with designs representing the Nativity, the Resurrection, the Ascension, and the Descent of the Holy Ghost; while the quartrefoils are filled in with ornament corresponding to that introduced in other parts of the windows.—*Builder*.

TIMBER SALE IN NEWRY.

The Newry Saw Mills Company held the first of their periodical timber auctions at their admirable and spacious business premises, Merchants'-quay and Butter Crane-quay, on Thursday, 11th instant. It is seldom that the trade-circular of a provincial importing firm meets with such a response as did that of this respected proprietary on this occasion. Nearly all the influential houses in the trade were well represented. The competition from the commencement was keen and animated, and although sanguine speculators might have hoped that prices would range a shade higher, under all the circumstances the issue must be pronounced to be highly satisfactory. We give a few of the quotations with which we have been furnished:—Bright spruce Quebec deals, second quality, £13 to £13 5s. per 120, 12 x 9 x 3; best quality, £15 to £15 17s. 6d. per 120, 12 x 9 x 3; thirds, £11 to £11 15s. per 120, 12 x 9 x 3; bright spruce Quebec boards (firsts), £15 17s. 6d. to £17 15s. per 120, 12 x 9 x 3; seconds, £13 10s. to £14 7s. 6d. per 120, 12 x 9 x 3; bright spruce St. John deals, £10 15s. to £12 7s. 6d. per 120, 12 x 9 x 3; St. John battens, £8 2s. 6d. to £10 per 120, 12 x 7 x 3; bright spruce ends, £9 5s. to £11 7s. 6d. per 120, 12 x 9 x 3; yellow pine timber, 17d. to 18¾d. per foot; pitch pine, 15½d. to 17½d. per foot; red pine, 16½d. to 17½d. per foot; memel, 16½d. to 18d. At the close of the proceedings it was found that over 27,000 deals, deal ends, and battens had been sold, with a proportionate quantity of timber. The sale was under the management of Mr. Joseph Loughran.—*Telegraph.*

SCIENCE AND ART DEPARTMENT.

The following is the official summary of the Report of Science and Art Department, just published:—"The influence of the Department throughout the United Kingdom is being extended year by year in a rapidly increasing ratio, and the number of persons who have during the year 1869 attended the schools, museums, and other institutions receiving aid from the Parliamentary vote, are considerably greater than in any previous year; and it is especially satisfactory to observe that the number of persons receiving instruction in Science applicable by Industry, has increased from 15,010 in 1868, to 21,500 in 1869, or upwards of 43 per cent. The number of individuals instructed in Art has also increased from 123,562 to 157,198, or 27·2 per cent. At the Royal School of Mines there have been 17 regular, and 93 occasional students; at the Royal College of Chemistry, 136 students; at the Royal School of Naval Architecture there were 40; and at the Metallurgical Laboratory, 35. The evening lectures were attended by 1,617 artisans and school teachers; and 253 Science teachers attended the special courses of lectures provided for their instruction. At the Royal College of Science, Ireland, there were 32 individual students; and 5,773 persons attended the various courses of lectures delivered in connexion with the Department in Dublin. The attendance at the Evening Popular Lectures, which were delivered in the Edinburgh Museum of Science and Art during the session 1868-'69, was 1,386. The total number of persons, therefore, who have received direct instruction as students, or by means of lectures, in connexion with the Science and Art Department, is upwards of 187,000, a total exceeding that of the previous year by 41,300, or 28 per cent. This shows an increase in the rate of progress, as compared with that of the previous year of 10 per cent., the numbers in 1868 having been nearly 18 per cent. higher than in 1867. The museums and collections under the superintendence of the Department in London, Dublin, and Edinburgh have been visited by 1,798,842 persons, showing an increase of 216,987, or upwards of 13·7 per cent., on the number in the preceding year, which was 1,581,855. The attendance at the Art and Educational Libraries and at the Library of the Royal Dublin Society continues to exhibit a satisfactory progress; the numbers in 1869 having reached a total of 48,244, being 10,315, or 27 per cent. more than in 1868. The returns received of the number of visitors at various Local Art and Industrial Exhibitions, to which objects were contributed from the South Kensington Museum, show an attendance of upwards of 338,000, as against 290,000 in the previous year. The total aggregate increase, therefore, in the number of persons who have availed themselves of all the different means afforded by the Department of obtaining instruction in Science and Art is upwards of 596,000, or 33·5 per cent. on the number in 1868; the approximate totals being 1,775,400 in 1868, and 2,372,000 in 1869. The expenditure of the Department during the financial year 1869-'70 exclusive of the vote for the Geological Survey, was £201,552 15s. 10d., or £2,851 9s. 11d. more than in 1868, when it amounted to £198,701 5s. 11d. We are thus enabled to report to your Majesty that the beneficial influence of the Department has been materially extended during the year 1869, while its expenditure has been proportionately less."

INDUCEMENTS FOR COMPETITION.

The following is copied from our contemporary, the *Building News.* It affords another sample of the strange manœuvres of church committees:—

Sir,—Behold a *morceau* of the 19th century, circulated by certain Solons of the thriving and good old town of Nottingham! The italicising is not an interpolation, but is in the original.

"Sir,—It is proposed to build a new Wesleyan chapel, with school-room underneath, at the top of York-street, in this town. The entire cost is not to exceed £3,500 (the site excepted); this sum must include boundary walls, heating with Haydn's apparatus, if not too expensive, all inside fittings, together with architect's fees, *in short, everything, and there must be no extras.*

"The building to accommodate about 800 adults, including 100 free sittings. The exterior to be Gothic, *without spire, liberally treated.*

"A large room will be required at the rear of the chapel, on the same level, to hold at least 100, and a minister's vestry attached. Three other class rooms will be required.

"The interior to have no pillars, except for gallery supports. The pews to be of pitch pine, stained; the rostrum, or semi-rostrum, placed low, with communion in front to command the gallery and area with ease. The roof and the whole arrangement must be *carefully adapted for hearing.*

"The committee are desirous to confine the erection of this chapel to one of the architects of Nottingham; a few names have been selected, and if you will furnish an elevation and ground plan, on condition that, if approved, your services will be accepted as architect, the committee will feel obliged. Please note that no compensation is offered.

"Plans, &c., must be forwarded to the Rev. J. Mason, 58, Mansfield-road, Nottingham, on or before Monday, July 25, 1870.

"On behalf of the committee, we remain, yours, &c.

"J. Mason, Ministerial Sec.
"J. Howitt, } Lay Secs.
"Jas. Robinson, }

"N.B.—In furnishing your estimate of cost, please state difference between Bulwell stone and brick.

"Clumber-street, Nottingham,
"June 29, 1870."

Truly the document has vigour if it lacks perspicuity. Upon the money part our friends are very strong. "The entire cost, including architect's fees, is not to exceed £3,500," and, furthermore, must include "*in short, everything,*" and beyond this "*there must be no extras!*" Safe people these committee men! But how about "Haydn's (*sic*) apparatus." Possibly he of Cromer-street is intended, and not the man of the "box of whistles;" the former will feel flattered, however. We think the apparatus *will* be "too expensive" with the "school-room underneath." The question has evidently been a botherer for our "committee," and so is bequeathed to the "selected few." Our Wesleyan friends have, in their time, done good service to humanity, but they have not hitherto been exactly in the van in "Gothic"; we hail, therefore, with unmingled gratification, the advent of the "Gothic exterior *without spire, liberally treated.*" Now for the olive wreath, ye "selected" sons of high art! De Wykeham to the rescue! For oh! when you leave the "exterior" and get to the interior, "what a falling off is there!" a mist of "pews," "a rostrum or semi-rostrum," and "a communion (whatever that may be) to command the gallery!" (Shade of Murray!) Well, this bit is a *leetle* obscure, or, "in short," as the committee would put it, a puzzler. Well, never mind, for, as Lord Dundreary says, "putbles are made, you know, on purpoth." Cheer up, for inside no "Gothic liberally treated" haunts your bewildered brains. What shall the inside be, then? Echo answers—"What?" Mr. Chunder Sen would probably suggest Græco-Indian, with Chinese feeling, for it is not chronicled, the greatness of Confucius as a master-mason? But steady, gentlemen, the whole arrangement "*must be carefully adapted* for hearing," not a bad idea either—and another strikes us; we adventure it—also, let "the whole arrangement be carefully adapted for"—worship.

Do our eyes deceive us? "Please note that no compensation is offered!" This is too "dree" to be true, because we have a lively recollection of a ten-pounder being given, or at least offered, for a £1,500 design, and if a more subdued, yet still a grateful reminiscence, of the offer of a £5 "prize" in another case. But come, come, "no compensation!" We like a *little* humour, but, "honour bright," this is stretching a joke too far; we shan't let you off without "a leg of mutton and trimmings," and liquor round.

"Plans, &c.," in three weeks. Oh, they'll do double that "like winking," all of them; they've nothing to do in Nottingham but to "offer services that, if approved, will be accepted." All right, Messieurs le Comité.

"N.B."—What, isn't the female mind at rest? What next? "difference in cost"—our "estimate"—estimates made for us—"not to exceed £3,500" must include in short "everything," and in addition, "no extras." Ha! ha! "difference?" Good—two and two won't make five, "no way you can fix it." Sanhedrim of Clumber-street, Nottingham, fare ye well; may your shadow never grow less!—I am yours, &c.

Leonardo De Pasquinadez.

DISTRICT LUNATIC ASYLUMS, IRELAND.

The new asylum for the County Down, which has recently been completed, at a cost of about £60,000, is to receive back from the County Antrim the sum of £23,295 towards the cost of their new institution, being the amount of their interest in the asylum at Belfast, hitherto the District Asylum for the Counties of Down and Antrim, and built at their joint expense.

The award has been made by Mr. Wilkinson, architect, who was appointed under the warrant of the Lord Lieutenant to act as commissioner and valuator for this purpose.

According to the statements supplied to the grand juries at the late assizes, the particulars are made up as follows:—Value of site, £8,731; present value of the buildings, £36,261; furniture, £1,565; total present value, including improvement of land (after allowing a sum of £13,000 for depreciation) is £46,826.

The award having been acquiesced in by the respective grand juries, repayment by twenty-eight half-yearly instalments will commence from the next assizes.

We learn that large additions are being made to the Richmond Lunatic Asylum in this city, which forms a District Asylum for the County and City of Dublin, and the Counties of Louth and Wicklow, whereby any separate new building for either of these counties will be now awarded.

Uniting Parchment to Paper, Wood, Etc.—It is not an easy thing to join the stiff, smooth surfaces of parchment paper on to other paper, or on to wood, pasteboard, &c. The paste does not seem to hold, and on this account this paper has not been so generally used in bookbinding and for similar purposes. The difficulty can be overcome in a very simple way. The surface of the parchment must first be moistened with alcohol or brandy and then pressed while still moist upon the glue or paste. When two pieces of parchment are to be joined both must be moistened in this way. It is said that the paper would sooner tear than separate where it has been thus fastened together. Another way is to put a thin piece of paper between the surfaces of parchment and apply the paste. This forms a firm joint, and can with difficulty be separated. Glue and flour paste are best adapted for uniting surfaces of parchment. Gum arabic does not answer.

MEMORIALS OF "MUD ISLAND" AND ITS ENVIRONS.

Resuming our notice of "Mud Island" and its Environs, our pathway now leads us in the Richmond and Drumcondra direction. During the last fifty years some slight improvements have taken place in these quarters, but, on the whole, both neighbourhoods are much in the same state they were thirty years ago. The River Tolka is affected by tidal action up through Richmond as far as the cascade or waterfall, in the vicinity of Clonliffe Mills; above this of course it is impossible for tidal action to reach. An older mill than the present, on the same site, was swept away by a high flood in the river between thirty and forty years since. Across the river here are the lands of Fortick's Grove (now Clonliffe College). The old mansion was originally inhabited by Tristram Fortick, Esq., a liberal citizen of Dublin, who left a bequest for an asylum for aged persons. This asylum exists in Denmark-street, Dublin, over the door of which a tablet tells of the generous donor, his name, residence, and the year of his bequest. Fortick's Grove was for a long time the residence of the celebrated Frederick Jones, sometimes called "Buck Jones," from a little extravagance in his dress and manner. Jones was the well-known lessee of old Crow-street theatre, and it was to him that Wilson Croker, of the Admiralty, addressed his "Familiar Epistles." Many strange stories were current years ago concerning "Buck Jones," but we have not time to enumerate them. Russell-street bridge, leading from the Circular-road to Clonliffe, sometimes called Jones' Bridge, was built by him, or at his instance. The road leading from the foot of Ballybough Bridge to the Drumcondra road still bears his name. A tragical affair occurred once, of which the mansion of Jones, at Fortick's Grove, was the scene. One of his discharged or offended servants planned with others for a robbery of his master, but another of the servants who was made a confident of the intended robbery, and who agreed on the condition of a share in the plunder, got sorry, or turned what is called "informer" on the rest. A certain night and hour was appointed for entering and carrying off the booty, and the time selected was at an hour about midnight, when Jones' business would have detained him in Crow-street at his theatre. Having been apprised, however, of what was intended, Jones secured the services of a few of the military from the Castle, placed them in convenient parts of the house on the night of the intended robbery, and awaited the signal which was to be given in answer to the robbers by their supposed confederate within. The moment arrived at last, the whistle in answer was given by the informer within, the robbers entered, but not to plunder as they thought, but to be bayoneted. A sanguinary struggle took place between the robbers and the soldiery; three out of the gang were shot dead in resisting arrest, and the others were either wounded or taken prisoners. The three robbers who were shot are said to be buried at the foot of Jones'-road. Several years ago we were pointed out the spot, but we cannot vouch for the correctness of their burial-place.

Jones had his theatre destroyed one night, the scenery was pulled down, and the house was set on fire by the gallery audience because he failed in producing a certain novelty he had promised. The said novelty, we believe, was a famous acting dog, which was to take the part of "the Dog of Montargis." The "gods" got the hint that he might have procured the dog in question if he liked, but that he would not give the owner the price demanded for its services. He appealed in vain to the enraged audience to desist and he would have it the following night, but they would not. The theatre was almost completely gutted, and the glory of Crow-street Theatre was said to have departed after this affair.

Fortick's Grove was for many years uninhabited, until it was occupied by the revenue corps, and after their amalgamation with the constabulary it was again for some years untenanted, until bought by the present possessors.

For many years the construction of a road was talked of, across from Clonliffe, spanning the Tolka, and joining the Goose Green-road at Richmond. If this had been effected thirty years ago the northern suburbs would have much improved. Such a road would have a direct route from Mountjoy-square through Fitzgibbon-street, Russell-street, and thence over the river. Such a route would be most fashionable, and would lead in a direct line from the city to the country. Is it too late to think of it still, or does vested interest stand in the way? Pshaw! If it would lead to the improvement of Dublin northwards the Corporation ought to do it in some time to come. The canal is already bridged, the road is blind, its continuation would give light and air and increased health to the city.

In Richmond, at a place called Grace Park, we believe, the noted Major Swan once lived. The major was the same functionary who, in conjunction with Major Sirr, arrested Lord Edward Fitzgerald, of '98 memory. Swan in his old days became a rather generous personage it was said, and was well liked though formerly feared. Along the roadside in Richmond certain thorn bushes, with seats in them, used to be pointed out as the beggar's, or robber's, or watchman's seat. We remember those old thorn bushes in our juvenile or school days, and in the daytime we sat in them. By constant use the branches were bent down and the surface became nearly as smooth as a cane-bottom. A nursery and gardens for many years have been cultivated by the Messrs. Farrell, seedsmen, and a Presentation Convent of Nuns, with schools attached, is of old standing in the neighbourhood. Some few old mansions are scattered through the district belonging to the last century, but their style of architecture calls for no particular notice.

Approaching the village of Drumcondra through the Richmond Road we pass below an ordinary-looking grey mansion, situated upon a hill. This is Clonturk House: it was once occupied by a Frenchman, or one of French descent, named Duval. The ground around this mansion was a place of great resort by the pleasure-loving citizens of Dublin upwards of half a century ago. In 1819 the enterprising Duval endeavoured to convert these grounds of Clonturk into a second Vauxhall Gardens, like what Vauxhall was when George was king. By the aid of mineral wells, artificial spas, into which sulphur, old nails, horse-shoes, and sundry things were thrown, he presented the citizens with drinks of a sort of chalybeate springs, artificially pleasant if not naturally pure. In addition, it had swing-swangs, merry-go-rounds, rockets, balloons, and sundry fireworks. Duval's speculation went on well for a while, and Drumcondra Road was crowded on Sundays and holidays—became a sort of "Strawberry Beds." Duval had his day: the citizens had their pleasure; but everything did not go smooth,—fashion veered, and the glories of Clonturk departed.

Belvidere House and grounds were once the residence of Lord Chancellor Lifford, a peer of the Irish Parliament in the last century. It is a red brick mansion, with many windows. Some people once averred that the mansion had got "windows for every day in the year"—a goodly number, indeed. It does not show that number in our time. This house was the residence for many years, also, of Sir Coghil Coghil, Bart., descended from a respectable and old Yorkshire family. A monument is in Drumcondra Church, in marble, with bust, in memory of Marmaduke Coghill, a distinguished member of this family, who held many parliamentary offices, and who was at one time Lord Chancellor of Ireland. In Belvidere lawn the first balloon that was seen in Ireland ascended with the celebrated Sadlier.

The "Cat and Cage" is the name of a very old two-storey thatched tavern in Drumcondra village; it was kept by a Mr. Donnelly once, and achieved a popularity in his day—say between thirty and forty years ago. It still exists. The signboard shows a hungry grimalkin striving to claw out a much-affrighted blackbird—shall we say a small crow. The name of the original artist is lost in the misty space of time. The several re-paintings have not added much to the artistic effects of the original, but serve to show a cat and cage.

A little farther on is a building that tells by an inscription of an Alms House, with the date 1820. What became of the bequest? who holds the money? The house stands, but there are no inmates for years in the terms of the charity. There are many charities which require a looking after. A Special Commission, if instituted, might discover families in possession of income to which they have no right.

This Alms House was for many years occupied as a local post-office and dispensary. In 1798 the house was garrisoned by the Government with a detachment of military, intended to intercept the Swords and Santry "rebels," and others northward, from joining their companions in Smithfield.

We were told some years since, while making enquiries in this district, that the celebrated Lady Morgan, when Miss Sydney Owenson, lived for a while, or went to school, here. We traced up the "waif," and we ascertained even more particulars; some are mentioned through other channels, and some more may see the light hereafter in a more collected form.

All Hallows College dates its foundation from 1843. It is supposed that a religious foundation once existed centuries ago here. The old mansion that stands in the lawn of the College grounds was erected in the last century by the Earl of Charleville, we believe. It is a fine old stone-faced building. It was subsequently occupied by John Claudius Beresford, of Irish Rebellion memory, and who was credited with whipping the rebels on Marlborough Green, the site of the present Board of Education and National Schools. Thirty years ago, or less, it was occupied by Sir Guy Campbell, the then head officer of the Irish Constabulary Force. Since 1843 the grounds are in possession of the directors of the Missionary College of All Hallows, which was established for foreign missionary purposes. A Rev. Father Hand, a county Meath curate, was the founder. Many new buildings and wings have been added of late years, designed by Mr. J. J. M'Carthy, architect. The College is now an extensive establishment.

Drumcondra churchyard is a historic spot. The citizens of Dublin, with few exceptions, are in ignorance of the noted men who are buried in this unfrequented graveyard. Before the opening of Glasnevin churchyard, Drumcondra was much resorted to as a burial place for the city. The present church is a modern building, and its style calls for no notice; it is the plainest of the plain, and is desolate of all ornament. It was erected in the last century by the Coghill family. Among those buried of note in Drumcondra churchyard is James Gandon, the celebrated architect of the Custom House, the Four Courts, King's Inns, a portion of the Irish Parliament House, Carlisle Bridge, and other works. Also, in the same grave, Captain Francis Grose, the celebrated antiquarian. Rather, we should say, that Gandon is in the grave of Grose, because the latter died many years previous to his friend the architect. They were bosom friends during life, so in death they were not divided. Francis Grose died in 1791; Gandon did not die until he had attained a ripe age thirty years later. The one flat slab covers both, but not one line of inscription is visible on the antiquarian's tombstone to tell that the architect also lies below. This is bad treatment on the part of Dublin to its famous architect. No tombstone or inscription tells yet of his whereabouts, and yet how much does not the City of Dublin owe to his genius. Grose, the antiquarian, was the author of several antiquarian works, including England, Scotland, and Wales, and had proceeded a good way on the antiquities of Ireland at the period of his death. Grose was also a friend of Robert Burns, and the poet addressed some well-known lines to him. Gandon died in the village of Lucan, leaving one son and two daughters behind him. The probate of his will was proved under £14,000. Whether any of his children or descendants still live, we are unable to say.

Thomas Furlong, the Irish poet and translator of "Carolan's Remains," lies buried also in Drumcondra. The monument above his tomb was erected by the late James Hardiman, the author of a "History of Galway," and other works.

There are some Bourbon refugees of the French revolution lying in Drumcondra graveyard, and noted citizens and clergymen. A few old tombs too are scattered about, dating back two centuries, but nothing very ancient appears.

A house or inn called the "Ivy Cabin" once existed in Drumcondra, kept by one Bacon; it was famous in the days when Drumcondra had "lashings of fun and lots of funerals;" but after Duval's decline Drumcondra's dead departed for the new Glasnevin, the "Ivy Cabin" existed only in name—few even now remember it.

We drop the curtain now on the "Memorials of Mud Island and its Environs," hoping that our readers have enjoyed some little amusement if not instruction by our rambles. We will not say that in letting the "drop" fall we do not intend to make any further appearance on the little island stage where we have been exhibiting a little of the drama of the storied past. It is possible that we will yet have to make our appearance in an After-piece. Thoughts will come back to the memory, recollections will be recalled, and perhaps "Mud Island" will have *yet* A SEQUEL.

SEA BATHING.

Enterprise should be the order of the day at those places by the sea side which are visited during the summer months. Such, however, is not the case "at all, at all." Owners of land, hotel keepers, and railway companies seem to be utterly lethargic both to their own interests and the wants of the public in this respect. The number of visitors, and the amount of money that annually passes away from the coast towns of Ireland to England, Scotland, and the Continent, must be very large indeed; and this reflection is the more irritating from the consideration that, the sea-coast towns and villages of this "emerald isle" afford every natural advantage, and would, if a due amount of art and enterprise were expended on them, not only detain hundreds of people who fly away to spend their holidays in other lands, but would attract visitors from other shores. If one tithe of the enterprize that has been bestowed on places in England, whose natural aspect would otherwise have been a mere desert, were brought to bear on almost any of our sea side places of resort, the result would be highly remunerative. Compare the aspect of an English and an Irish watering-place, and the former, when the season is over, may represent the aspect of the latter at the height of the season. Our sea-side places of resort are, on the whole, melancholy. People from the marts of commerce, lugubriously, as a solemn duty, leave for the shore in April or May, sneak about at the sea side for a month or so, and then, just when the English season has commenced, return from what seems a weary, flat, stale, and unprofitable sojourn,—unprofitable certainly to the resident tradespeople of the place.

It is true that in one or two instances this state of things has been reformed "indifferently well" with us. But until it is "reformed altogether" we cannot expect to witness much improvement. Our sea-side places of resort are decidedly melancholy even at the height of the season. Not because of the climate, nor the scenery, nor the "melancholy ocean," as it has been termed (which, by the way, is far more black and melancholy on the east coast of England), but because of the absence—the almost utter absence—of the supply of *the* want for which a sea-side place of resort cannot thrive, indeed can hardly exist, namely—*sea-bathing.*

The establishment of this is the one thing needful. Whatever other institutions, amusements, or recreations are necessary will naturally follow. It is positively astonishing to observe the almost entire absence of this one thing needful. Never need the residents of a sea-side town expect much improvement without it. Owners of building ground abutting on the sea will do well to bear in mind that without this *sine qua non* their land will remain unsold, and their houses unlet so long as this state of things lasts. What do people visit the sea side for? and what are houses there sought after for but with a view to the advantages of sea bathing? Even the rudest appliances are, of course, better than nothing at all. But when these are removed, with a view to render the shore more sightly,—or, in fact, with whatever view,—land and house property in that place is sure to become dead, and the spot forsaken. What a short-sighted policy must actuate owners of building ground and houses at the shore to overlook this palpable need, the supply of which could have no other result but to add to the value of their property! We are not merely not advancing, but we are actually retrograding in this matter. Many places by the sea side, where, a short time ago, there used to be means for sea bathing, are now quite forsaken; the houses which then had tenants in them, while people were always ready to avail themselves of a vacancy, have long been empty, and seem likely to remain so. New houses of more pretending appearance, which have been built, and for the sake of whose tenants (first catch your hare) the bathing gangways and sheds have been removed, are also untenable, and seem likely long to remain so. The reason of this is quite obvious. Positions by the sea are mainly dependent for their success on the principal reason why people go to live at the sea side, which is—that they may have sea bathing for themselves and their families. True, it may not be the house-owner's duty to provide it; but, at any rate, it is his interest to facilitate it. To destroy the means of obtaining it, and to prohibit it where his property abuts on the sea is to deteriorate his own property. We are sorry to see that the idea is becoming fashionable with landlords. It would be impossible, after due consideration, that they should not perceive the reasonableness of provision for sea bathing and its intimate connection with the value of their property. To destroy the one is to deteriorate the other. The obstinate clinging to an idea, however, is fatal to improvement and prosperity. In these days it seems to be thought that houses must be built with the maximum of display and the minimum of comfort. When will landlords be wise in this matter? The sites for building to be let, which never do let, untenanted houses, the empty hotels, &c., at sea side places are preposterous. Nearly every other thing is provided for the people who are expected to come, but who don't come, and no wonder, for there are no sea bathing facilities. If house and landowners, tradesmen, and hotel-keepers would invest the money annually wasted in empty houses and unsold land, by providing proper and capacious sea bathing places, the scene would be changed.

THE PEOPLE'S PARK AT BALLYMENA.

The People's Park, Ballymena, was inaugurated on Tuesday evening with great *eclat.* The park is the gift of Sir Shafto Adair to the people of the town. It is situated a few minutes' walk along the Ballymoney New Road, just a sufficient distance to have it well removed from the smoke and turmoil of the town. It covers a portion of beautifully undulating ground, and commands an exceedingly fine view for many miles around. It consists of forty-five acres, walled round by a substantial fence of masonry. The ground is in process of being laid out in plots for shrubs and trees, intersected with gravelled walks. There is also to be a pond or small lake covering one and a-half acres, and sunk to the depth of eleven feet, on east side of the park. Irrespective of the value of the ground, Sir Shafto has expended upwards of £2,000 upon its fencing, draining, and ornamenting. On the whole, the gift is a princely one, and will form a pleasing retreat after the hours of labour for those engaged in mercantile or industrial pursuits. The park was formally opened by Sir Shafto in the presence of the Town Commissioners and many thousands of people. At night there was a grand display of fireworks, after which a procession, headed by a large number of torch-bearers, and accompanied by two bands of music, escorted Sir Shafto Adair from the park to his own castle, where the proceedings terminated. The utmost order and good feeling characterised the entire proceedings.

THE BRITISH ASSOCIATION.

At the bi-monthly meeting of the Belfast Harbour Commissioners on the 2nd inst., Mr. Patterson moved—"That an invitation be forwarded to the British Association for the Advancement of Science, asking them to meet in Belfast as soon as their engagements would permit." The resolution was passed unanimously. It was explained that the Association would meet in Liverpool in the present year, and that possibly their arrangements were made for 1871, so that 1872 would be the earliest period at which they could visit Belfast. The last meeting in this town was in the year 1852.

NEW CATHOLIC CHURCH, CORALSTOWN, CO. WESTMEATH.

We give a lithographic illustration of a new Catholic church which is about to be erected at Coralstown, County Westmeath, from a design by Mr. J. P. Davis. The plan consists of nave, chancel, and sacristy under detached tower, communicating with the chancel by means of a cloister-porch. The church will be built of local stone, and will cost, when complete, about £2,000. The extreme length is 108 ft.; the nave is 32 ft. wide, and the chancel is 24 ft. The tower will be about 80 ft. high to finial. The church is being built for the Rev. Thomas Allen, P.P., and the contract has been taken by Mr. F. Nulty, Mullingar.

INTEREST IN ARCHITECTURE.

Architecture is public property, made for free exhibition, and a subject in which all, without exception, are thoroughly interested. Our cities derive all their elegance from the style and finish of their buildings, public and private; hence the interest which every citizen has in the advancement of our art. It has great influence in forming the character of the community, and the substantial proofs it presents indicate the rank the nation at large assumes in the progress of civilsation. How contracted then is the view of this great, this comprehensive subject, taken by the majority of persons, referring its study to the comparatively limited circle of those practising it as an art, as *alone* interesting to them.

The two subordinate arts of Painting and Sculpture are founded exclusively on certain laws of taste, about which the uninitiated are not necessarily concerned. The observer sees and discriminates, according to the amount of natural or acquired judgment possessed by him. He feels admiration or displeasure, as his peculiar taste or fancy dictates; but he never dreams for an instant of remedying the defects painted or chiselled out before him; the work of art is, in his eyes, an irremediable failure of the artist, and there is the end of it.

Not so with architecture; every man sees remedies for the defects he observes. In fact, with regard to it each individual is capable of forming an opinion, guided by that practical judgment which is more or less inherent in all, and is not confined to the human race, but appertains as well to the birds and beasts. Man may relish the passing view of a fine art production, as such, but there is a great deal in the observance of architectural design in which he feels more intimately interested; because, on this subject, he knows what he wants, and, therefore, understands himself.

In fact the useful and the beautiful are blended together in every truly architectic composition; and he who feels not the inspiration of one, is sure to know the existence of the other; for the reason that the mind that is not theoretical, is practical; or it is void. Proportion in a building suggests itself to the most common mind. Everyone can tell whether a room is too low for its length and breadth, although a definite knowledge of proportion's laws may be wholly absent. So with every feature of that room; its door, windows, cornice, and plinth. All know intuitively what the want is, although unable to compose for themselves. Many instances have there been of designs which looked perfectly satisfactory on paper, being very satisfactory when built; to the extent of obliging the owner to have recourse to very extensive alterations and improvements; and many, too many, which it were better had been pulled down altogether and designed anew.

Who, then, are interested in architecture? We answer,—*all*; and desire that every item of information which bears upon the subject should be worthy of attention; and every publication devoted to the disquisition and promotion of it, should meet with a patronage as universal as its applicability to the wants and comforts of mankind.

CORRESPONDENCE.

[*It is to be distinctly understood that although we give place to letters of correspondents, we do not subscribe* editorially *to the opinions or statements set forth in same.*]

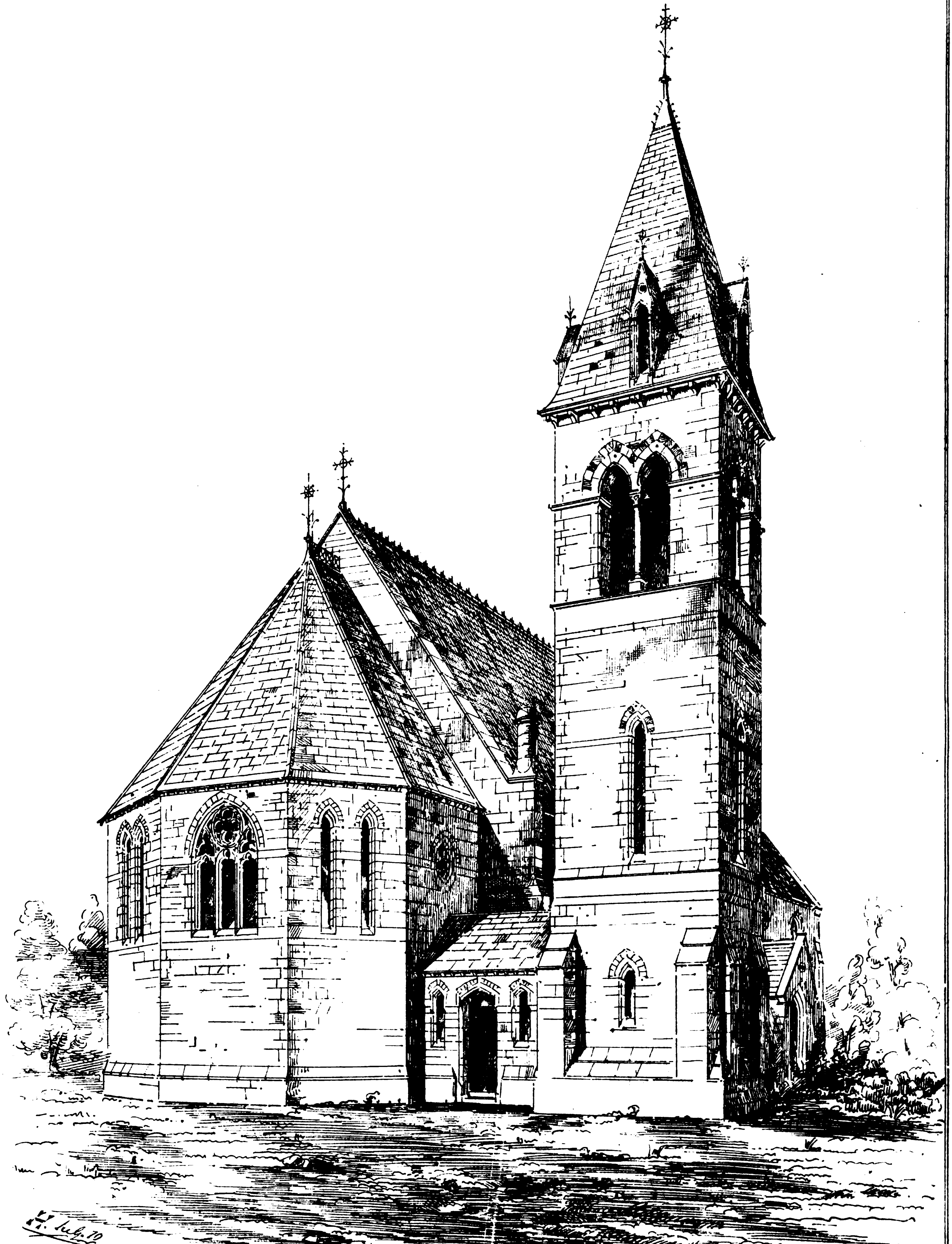
THE ROUND TOWERS OF IRELAND AND SCOTLAND.

TO THE EDITOR OF THE IRISH BUILDER.

The spirit of decay has breathed
Along these wasted walls,
And on their ruins heavily
Time's sullen footstep falls;

Around the temple's crumbling pride
The folding ivy twines,
And the grey moss has gathered o'er
Their desolated shrines. Anon.

Sir,—A graphic description of the Drumbo Round Tower, in the North of Ireland, written to Sir William Wilde by Mr. J. Darling, lately appeared in the leading Belfast daily paper (*Northern Whig*), in which your journal is referred to as "deserving of the thanks of all Celtic scholars, for aiding to revive the Round Tower controversy." Your readers must endorse the sentiments here expressed, for nothing calculated to supply additional information on those ancient edifices has escaped your notice; and I am personally indebted to you for giving extracts, from time to time, of my letters published in a local journal. It is needless to recapitulate *in globo* the arguments that I have so often advanced in favor of the Pagan origin of our Irish Round Towers, supported, as they are, by the overwhelming evidence adducible from Scripture, profane history, and tradition. I therefore refer to another point, only cursorily glanced at by Irish archæologists, viz., the existence of Round Towers in Scotland in every respect conformable with the buildings in this country, proving that Caledonia, too, can lay claim to the Eastern connection on which I based my proof, establishing the origin, design, and uses of the Round Towers in both countries, and that the Pictish nation possessed memorials which, to the present day, remain living monuments of the Eastern associations, which I have so long laboured to show indubitably settle this great question. That the worship of Baal prevailed in Scotland, abundant proofs testify. Vestiges of his superstition still remain in the Highlands, where the Beltain, or first of May, is observed, as in Ireldnd, by kindling fires on the hills and indulging in all kinds of diversions. When the Romans invaded these islands, the Druids fled from Britain not only into Ireland, but to all parts of Scotland, and expressed surprise at finding races in both Erinn and Caledonia who observed the festival in honour of Belinus. In an architectural point of view, the Druidic temples differ so much from the *atush khaneh*, or round tower of the Persians, and similar buildings erected by the Eastern nations, that I need merely refer to the absurdity of drawing an analogy, for none whatever exists. The magnificent remains at Stonehenge and other places where this worship was conducted in all its grandeur, verify the difference; and that, according to the Druidical creed, "it was unlawful to build temples to the gods, or to worship them within walls and under roofs." Consequently, the Druids did not build the Scottish Round Towers; and, if not, they were erected by the same race that built the Eastern and Irish edifices. That brilliant Scotchman, Sir James Mackintosh, acknowledges that our antiquity is far greater than that of Scotland, and does not deny that our Celtic forefathers introduced their religion, manners, and customs into that country. One thing is evident, that we understood the principles of masonry and building three thousand years ago. This knowledge was derived from the East; and, as I shall prove, the Round Tower of Abernethy, in Scotland, demonstrates this more conclusively than even our Irish buildings. The *noachidæ*, or first masons, built a tower in the Vale of Shinar; but we know little of its architectural proportions, save that it was the prototype of the sun temples erected afterwards. But it was reserved for Solomon to build a splendid temple for the worship of Jehovah; and we find the idolaters of surrounding nations attempting in many respects to vie with the superior architecture and workmanship of the great temple. In 1 Kings vi. we read that Solomon's Temple had several chambers, with winding stairs leading up to them; and the porches were supported by pillars. He also made a molten sea, which stood upon twelve oxen—"three looking toward the north, and three looking toward the west, and three looking toward the south, and three looking toward the east,"—all symbolic of sacrifice and facing the cardinal points. The connexion here between the symbolic number four in Solomon's Temple and the cardinal point apertures in the Round Towers is remarkable. But as to the Abernethy Tower: it is 75 ft. in height, and 48 ft. in circumference at the base. The strongest architectural analogy with Solomon's Temple are the four windows near the top, which are equi-distant, 5 ft. 9 in. in height, 2 ft. 2 in. in breadth, and each is supported by *two small pillars*. At the bottom are the rows of stone which served for the basis of a pedestal. It resembles the Round Tower at Swords, *minus* the conical cap. The Round Tower of Brechin in Forfarshire, is 100 feet high. It has the conical top like the Antrim and Ardmore towers in Ireland, and is 47 ft. in circumference. The thickness of the walls of both towers is 3 ft. 6 in.—a strong proof of their Eastern origin. The door of entrance in the former faces the north;—the north was the place of sacrifice; the great high place was the place of sacrifice. We find Solomon reproved (2 Kings) for sacrificing and burning incense in high places—these high places (or towers) doubtless were the buildings erected by him for his idolatrous wives;—and that a connexion exists between Solomon and the towers the old piece of sculpture adjacent to the Ardmore Tower, Waterford, testifies. The wise king is represented sitting on his throne with sword in hand deciding the women's quarrel about the living child; while near that again is a sculpture representing Adam and Eve with an apple over their heads; and also another showing a Jewish sacrifice. Beside the Brechin tower stands an old cathedral—a handsome Gothic pile—the steeple of which is 120 feet high, square and embattled. We have here the embattled steeple in close proximity, in Scotland as in Ireland, an additional guard to the treasure house, as at Swords, Cashel, Kilkenny, &c. One thing is evident, that the various arguments I have time after time brought forward receive further confirmation from the only two round towers in Scotland. They correspond in every respect. The architecture, the cubic metre, and the ecclesiastical associations form another link in the chain of evidence substantiating the Eastern connexion; and the more minutely we examine into the origin, use, and design of the round towers, the more will we be convinced, with Dr. O'Connor, that a connexion existed between this country and remote parts of the East from the earliest times. These are interesting facts to the archæologist, and should lead to enquiry, which, I am happy to say, is daily culminating towards the truthful climax on which I base the scriptural, historic, and traditional evidence that can alone solve the difficulties of the Round Tower question. The Irish towers have heretofore afforded me *pabulum* for the great argument; but the additional light diffused from the Land o' Cakes proves that I have not been pursuing a chimerical opinion; that the regal grandeur, the gorgeous ceremonialism, and the idolatrous orgies associated with Phœnician rule in Ireland had their counterpart in Scotland; and the sun-worshipping tribes can still point to the supremacy of their worship and rule on Caledonian soil; while the Round Towers of Abernethy and Brechin remain as solemn grey-worn preachers of the pristine glory and folly which has passed away for ever, and left nothing behind but those two solitary monuments to record the sway they exercised over



NEW CATHOLIC CH. CORALSTOWN. K. J. P DAVIS. ARCHt.

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the isle. Hoping soon to be privileged with inserting another letter, I remain, sir, yours,

Caleb Palmer.

Ashbrook, Raheny, Aug. 1, 1870.

P.S.—By scriptural and historical proof all difficulties are cleared up. Get a reference Bible. The parallel passages make everything as clear as sunbeams that they were sun temples and astrological watch-towers, the platform on which the prophets or high priests of Baal went through their incantations, sorceries, and divinations. Now refer to Deuteronomy xii., 3, 4: the true worshipper is to overthrow the altars and break the pillars, and burn the groves with fire. Then the parallel passage is Numbers xxxiii., 52, to destroy their high places. Refer to analogous passages and you will find the sun-worshipping kings of Judah are to be destroyed. Mark what the prophet Isaiah says of watch towers in the 21st chapter and 5th verse; parallel passage, Daniel v., 5. Here we find the archæological watch tower connected with dread visions; and Isaiah xxi., 8, speaking of the watch towers, refers to parallel passages (Habakuk ii. 1)—the watch tower is here also mentioned in connection with visions of the Chaldean sun-worshippers. In Psalm xviii. the royal psalmist, speaking of God, says He is his rock and high tower. Again, historic proof — Josephus records that Daniel the prophet, when he confounded the astrologers, built a tower at Ecbatana (and in his time—700 years afterwards—it was quite perfect), and that a priest resided in it, and a lamp was always kept burning in the front of it, and that the kings of Media and Persia were buried in it. See how this accords with our Irish Round Towers—the skeletons that have been found in them facing north and south. The very names of the towers settle the question.—Ard-more signifies the great high place; Ard-fert the high place that persons are brought to; Rhe-fert the royal burial ground (they buried them under the high altar where the celestial fire continually burnt); Clon-fert or cluan the holy place, fert brought to Cluan; Dalkin the holy place at Dalkin, Clondalkin; Kildare, the burial place where the celestial fire burnt for ages; Donaghmore the great castle on the ford. The plan of embalming kings, and having a lamp celestial burning always in the vault to scare away evil spirits, is traditionally kept up to this very hour. Those kings of Judah were kings and high priests. Now Cormac, King of Cashel, was both king and bishop in the ninth century. Ard-magh signifies the place of sacrifice; Baal had seven great altars—see how the seven churches take their place. The fignres of serpents and wolves on old temples in the Eastern and Western world were sacred to the sun-worshippers: they worshipped the large brazen serpent—hence the origin of St. Patrick driving the serpents out of Ireland. The old song says:—

Long life to St. Patrick; I'm sorry he's dead,
For he was a saint so clever.
He banished the frogs all into the bogs,
And kicked out the "sarpints" for ever.

Herod, the sun-worshipper, who lived in the first century, built round towers for that special purpose, Josephus records. For the mystic bearing of the four cardinal points they are connected with sacrifice (see Numbers ii.), all looking to the pillar for guidance and safety; and Ezekiel i. is also connected with Chaldean visions. C. P.

No memory of its former state,
No record of its fame,
A broken wall, a fallen tower,
A half-forgotten name;
A gloomy shadow on the wave,
And silence deep as in the grave.

Oh! better that the ivy wreath
Should clothe the mouldering tower,
Than it should be a place of strength,
For passion and for power.
All glory to those stern old times,
But leave them to their minstrel rhymes.
L. E. L.

INSTITUTE OF ENGINEERS.

TO THE EDITOR OF THE IRISH BUILDER.

Sir,—Will you, with your usual kindness towards the profession, be pleased to publish in your next issue of the Irish Builder the *names*, *addresses*, and *dates* of *entrance* of all members, graduates, and associates of the Institute of Civil Engineers, Ireland? This will be a very useful and necessary piece of information to young aspirants to the honor, some of whom now (and not without reason) think the association defunct. If I mistake not, a formidable array of good men and true will thus come to light, some of whom are now exploring in the jungles of tropical India, the frozen "savannees" of Canada, and the vast pampas of Brazil and South America.—Your's faithfully,

Asso. Inst. C. E., Engl.

Bagenalstown, Aug. 6, 1870.

[We gladly comply with the request made by our correspondent. The following is the last published list.]

List of Members and Associates, Institution of Civil Engineers of Ireland.

HONORARY MEMBERS.

Elected.
1861 Haughton. Rev. S., M.D., 40, Trinity College, Dublin.
1861 Robinson, Rev. T. R., Armagh.

MEMBERS.

1856 Anderson, W., Erith, Kent, S.E.
1869 Andrews, James, Sunnyside, Bray.
1865 Bailey, John, 8, Blackhall-place.
1861 Barton, James, Dundalk.
1865 Beatty, John, India.
1862 Blakiston, Mathew, Westminster, London, S.W.
1835 Burgoyne, F M. Sir J. F., Fortifications Office, London.
1847 Burtchaell, Peter, Larchfield, Kilkenny.
1854 Byrne, Edward, India, and 16, Lower Mount-street.
1865 Clark, G. R. Public Works Department, Lucknow, India.
1865 Cooke, Theodore, Poona, Bombay.
1861 Cotton, C. P., 36, Westland-row.
1860 Crawford, Robert, Westminster, London, S.W.
1869 Cox, William, S., Cecil-street, Limerick.
1863 Dillon, James, 17, Kildare-street.
1862 Dodd, George.
1847 Downing, Samuel, LL.D., Trinity College, Dublin.
1868 Dunscombe, Clement, Town Hall, Croydon, Surrey.
1869 Denham, J. W., 30, Merrion-square.
1836 Farrell, J. B., Wexford.
1865 Flemyng, B. F., 36, Westland-row.
1847 Frith, R. H., 19, Dawson-street.
1865 Gale, Richard. 9, Lower Sackville-street.
1862 Gibson, J. W., Stapleton-place, Dundalk.
1861 Going, T. H., Civil Engineer's Office, Railway, Madras.
1849 Gray, R. A., Palmerston Villas, Rathmines.
1857 Greene, J. B., 6, Ely-place.
1835 Griffith, Sir Richard, Bart., 2, Fitzwilliam-place.
1869 Grubb, Howard, 14, Leinster-road. Rathmines.
1861 Harty, Marcus, Drogheda Railway Terminus.
1862 Haughton, Samuel W., Carlow.
1845 Hemans, G. W., Westminster Chambers, London.
1845 Hill, John, County Surveyor's Office, Ennis.
1865 Johnston, Henry, 150, Leinster-road, Rathmines.
1858 Kelly, James, Roorkee, Bombay.
1868 Kennan, James, Fishamble street.
1847 Larcom, Major-General Sir T. A.
1856 Lewis, William, 13, Nelson-street.
1856 Lyons, M E, Vera Cruz.
1836 Mallet, Robert, Westminster Chambers, London.
1865 Mann. I. J., Port and Docks Office, Dublin.
1848 Manning, Robert, Board of Works Office.
1865 Maxwell, W J., Arlington-place, Manchester.
1860 M'Donnell, Alexander, St. John's, Island Bridge.
1847 Merrey, W. G., Blessington.
1862 Moberly, Charles H, Erith, Kent
1866 Morris, T B., India and Sandymount.
1847 Mullins, M. B., 18, Fitzwilliam-square.
1866 Napier, Charles G., Mallow.
1845 Neville, John, Jocelyn-street, Dundalk.
1856 Osborne, R. B, Philadelphia U.S.
1861 Price, James, Broadstone Railway Terminus.
1865 Price, W. H., Kurrachee, India.
1861 Smythe, J., jun.. Milltown, near Banbridge.
1835 St. Leger, N R., The Mall, Sligo.
1857 Stoney, Bindon B., Port and Docks Office, Dublin.
1864 Stoney, F. G., India,
1868 Stoney, E. W., C.E. Office, Railway, Madras.
1845 Tarrant, Charles, Waterford.
1844 Tate, Alexander, 2, Queen's Elms, Belfast.
1867 Taylor, Colonel M, Oldcourt, Harold's Cross.
1866 Townsend, Edward, Queen's College, Galway.
1860 Tuthill, R. R., Navigation Office, Newry.
1868 Thomson, James, 17, University-square, Belfast.
1835 Vignoles, Charles, Westminster. London.
1865 Waller, G. A., 91, Pembroke-road.
1862 Walpole, Thomas, Windsor Lodge, Monkstown.

ASSOCIATES.

1869 Apjohn, J. H., Public Works Department, India.
1866 Callwell, Robert, 25, Herbert-place.
1862 Crosthwait, T. P. S., India, and Fitzwilliam-square.
1861 Fitzgerald, Thomas. 3, Beresford-place.
1861 Geoghegan, Charles, 202, Great Brunswick-street.
1862 Harman, Hon. L H. King, Newcastle, Ballymahon.
1863 Martin, Thomas, North Wall.
1867 Martin, Charles E., 12, Fitwilliam-place.
1869 Moore, Joseph Henry, 18 Sidney-street, Manchester.
1861 Patterson, Benjamin T., 17, Kildare-street
1865 Quirke, Eugene, 179, Strand-road, Merrion.
1863 Stephens, John C., 4, Blackhall-place.
1867 Strype, William G., Drogheda.
1867 Woodward, Richard C., Brisbane, Queensland.

NAILS FOR OUTDOOR WORK.

Every one is familiar with the fact that a piece of rusty iron, rapped in cotton or linen cloth, soon destroys the texture of the fabric. A rusty nail, for example, if laid upon a few rags, will soon produce large holes in them, or it will, at least, render every point that it touches so rotten that the cloth will readily fall to pieces at these points, and holes will be produced by the slightest hard usage. Iron, during the process of rusting, tends to destroy any vegetable fibre with which it may be in contact. This explains, to a certain extent, the rapid destruction of the wood that surrounds the nails used in outdoor work, whereby the nail is soon left in a hole much larger than itself, and all power of adhesion is lost. Part of this effect is, no doubt, due to the action of water and air, which creep along the surface of the nail by capillary attraction and tend to produce rottenness in the wood as well as oxidation in the iron. But when we compare an old nail hole with a similar hole that has been exposed during an equal time, but filled with a wooden pin instead of an iron nail, we find that the wood surrounding the wooden pin has suffered least, and we may, therefore, fairly attribute a destructive action to the rusting of the iron. It might, at first sight, be supposed that, as the oxide of iron is more bulky than the pure iron, the hole would be filled more tightly and the nail held more firmly to its place. But, although this effect is produced in the first instance, yet the destruction of the woody fibre and the pulverization of the oxide soon overbalance it, and the nail becomes loose. Of course, the iron itself being also destroyed, its strength is diminished, and we have, therefore, a double incentive for preventing or diminishing the action that we have described. The only way to prevent this action is to cover the nail with some substance that will prevent oxidation. This might be done by tinning, as is common with carpet-tacks. Coating them with oil or tallow would be efficient if the act of driving did not remove the protecting matter entirely from a large portion of the surface. But, even then, it will be found that the oil or fat is stripped off the point, and gathered about the head in such a way to prevent the entrance of air and moisture into the hole. The most efficient way to coat nails with grease is to heat them to a point sufficient to cause the grease to smoke, and then pour the grease over them, stirring them about in a pot or other vessel. When the nails are hot, the melted grease will attach itself to them more firmly than it would have done if they were cold—indeed, so firmly that it will require actual abrasion of the metal to separate it. In erecting fences, laying plank or board sidewalks and the like, it becomes an important matter to secure the nails against the influence that we have mentioned, and yet the work must be done rapidly and cheaply. Nails may be readily prepared as described, or they may simply be dipped in oil or paint at the moment when they are driven it. In cases where it is not advisable to paint the whole fence, it is a good plan to touch the head of every nail with a brush dipped in oil or paint of the same color as old wood.

DUBLIN MAIN DRAINAGE.

The following notice has been served on the Town Clerk:—

NOTICE UNDER 10 AND 11 VIC., CAP. 34.

Dublin, August 12, 1870.

"Sir,—I hereby give you notice on my own behalf, and on behalf of other ratepayers of Dublin, that I object to the notice purporting to be signed by you, which appeared for the first time in the newspapers of this morning, as an insufficient and unsatisfactory compliance with the requirements of the 10th and 11th Vic., cap. 34, inasmuch as it omits to inform the ratepayers of the full extent of their powers under that Act of Parliament.

"And I now call upon you to publish within the time and in the manner required by the act a notice in which the ratepayers will be informed—1. That they are empowered to express an opinion on the resolution adopted by the Town Council by signing a remonstrance against it should they think fit; and 2. That if a majority of those entitled to vote at the elections of members of the Town Council so remonstrate within one month from the 8th of August inst.—the date of the confirmation of this resolution—then the Council cannot proceed to carry it into effect.—Your obedient servant,

"John M'Evoy.

"W. J. Henry, Esq."

LAW.

CORK SUMMER ASSIZES.

(Before Judge Keogh and a Special Jury.)

Evans v. *M'Swiney.*—This was an action brought by Mr. Evans, builder, of Cork, against the Very Rev. Canon M'Swiney, P.P., Crosshaven, for the recovery of a sum of £403, due for work done by plaintiff for defendant. A sum of £178 5s. was lodged in court by defendant as a full discharge for the work done by plaintiff.

Mr. O'Brien opened the pleadings, and Mr. Clarke, Q.C., stated the case. The rev. defendant in the early part of last year determined to build a new parish church, and for that purpose procured a design from the eminent ecclesiastical architect, Mr. Welby Pugin. Among other contractors, the plaintiff tendered for the execution of the work, and his tender was accepted at £2,869. In the progress of the building a dispute arose as to the nature of a certain item of the work, and thus described in the specification:—"859 yards superficial, extra only on masonry walling, for facing with hammer-dressed limestone, in random courses varying from 4 in. to 8 in. in height, well bonded with rubble backing." The real question in dispute was as to the meaning of these words. The foreman in charge of the works was directed as to the performance of this particular item of the specification by Mr. Barnett, who represented the architect, and proceeded to execute it, when it was discovered that, as interpreted on behalf of the rev. defendant, the work would cost 15s. per yard, while by executing it in the manner in which it was understood in Cork, and understood by the plaintiff, it could be done for 7s. 6d. a yard, as per contract. The meaning to be given to this part of the specification would, however, depend wholly upon the direction of skilled opinion. As counsel was instructed, plaintiff had expressed himself satisfied to leave the matter to the arbitration of Mr. Pugin, who consented to act, but the rev. defendant refused the offer of mediation, and the negotiations broke off. Counsel in conclusion suggested that there was still time to leave the matter to settlement by arbitration by some two respectable builders of the city.

His lordship asked whether Mr. Pugin was in Cork?

Mr. Exham—No, my lord. We received a telegram from him offering to come if he got £100. With respect to Mr. Clarke's suggestion that the matter be referred to arbitration, he should refuse to abide by it. His client had had to endure imputations thrown upon him outside, and had come into court to vindicate himself from them.

Mr. Clarke—Very well; let us proceed. But I must say that the rev. canon may be a very good theologian, but he is a very bad architect. He has now taken the execution of the work into his own hands, having got rid of his architect; but he shows an ignorance of æsthetics. He commenced to build with small regular courses, and now over that he has random work formed of large stones.

Canon M'Swiney—You shall see that hereafter.

Mr. Clarke—"Hereafter!" Oh! my lord, I submit that that is an attempt at intimidation. (Laughter.)

The plaintiff was examined, and deposed to having written to Mr. Barnett, when he found what was being done, stating that the work required was of a much more expensive kind than that mentioned in the specification. Mr. Barnett replied that the work done was only of the character required by the bill of quantities, adding that he could not recommend Canon M'Swiney to be satisfied with any other. Plaintiff further deposed to a conversation in which Mr. Pugin said to Canon M'Swiney that a "random work" was in England of a distinct character to what it was in Ireland. The bill of measurements which was prepared by Mr. Cleere, the surveyor who originally made out the bill of quantities, correctly describes the work as executed—"facing to rubble masonry with limestone in regular courses." What he understood to be specified in the bill of quantities was random work, built in courses, of stones varying from 4 in. to 8 in., which were to be dressed with the hammer by the mason as the work proceeded, and not with the chisel by a stonecutter on the "banker"; he had priced it accordingly at 7s. 6d. per yard superficial as an extra on the rubble backing, which was priced at 7s. 6d. per yard cube. He had charged for the work as done 15s. per yard—a fair price. When the dispute first arose he proposed to submit the matter to the arbitration of Sir John Benson or any other architect, which Canon M'Swiney refused. When Mr. Pugin came to Cork he decided that plaintiff was right, remarking—"what would defendant say if contractor completed the building and sent in his bill for several hundred pounds for this extra work." He also asked to have the matter left in his hands to decide, to which plaintiff consented, but defendant would not. Ultimately, Mr. Pugin made an offer to plaintiff to finish the work as it is now being done—*i. e.*, in full random work, and with larger material, the beds and joints being squared, at 10s. per yard: consented to this. Barnett dictated the memorandum in which this proposition was made; this was afterwards rejected by the defendant.

In reply to Mr. Exham—I did not see the specification before I commenced the work; I do not know that the specification contained the proviso that everything was to be "the best of its kind," or that the employer in default of the execution of the work by the contractor, was to complete it at his expense. Witness was closely examined with respect to the details of the contract. In reply to the jury, witness said he got the specification only after he had been accepted as contractor, but did not read it; the only specification furnished was in the form of items supplied in the bill of quantities.

Mr. Henry Hill, architect, deposed to the character of the work executed by plaintiff below the plinth, which was ashlar masonry in regular courses, slightly varying in height, with rock face and square chiselled beds; would be moderate at a cost of 15s. per yard; his own calculation was 15s. 9d.; he considered the language of the specification to be technically incorrect as a description of the work which defendant required; any builder would understand what is known as "random work," each course of which might be called a "random course."

Messrs. Hargrave, Roddy, Hunter, M'Mullen, Barnard, and O'Neill deposed to the character of the work done by plaintiff, which was regular coursed ashlar; had never heard work described in the terms of the specification, but would understand it to mean random work; what has been done was cheap at 15s. per yard.

Mr. Henry Cleere, surveyor, Belfast, deposed to having measured the work; had no specification, but notes written on drawings; had correctly described the work as executed; it was not "random" nor random-coursed work, nor was it hammered, but ashlar in regular courses; the beds and joints being chiselled square, the price charged was fair and reasonable. With reference to the item for excavation in shaley rock, had found that all the cutting for foundations was in rock; 1s. 6d. per yard was a fair price for this work, which included moving; in the bill of quantities "excavation" was specified without mentioning the nature of the ground to be sunk, this the contractor had priced at 6d. per yard including removal; in the absence of any further description "excavation" would mean sinking in earth or clay—not rock; it would be unreasonable to ask a contractor to cut through rock at this rate or under the circumstances; the cutting in rock was at a depth below the contract line.

Mr. O'Neill recalled, and corroborated statement of last witness as to the sinking in rock for all the foundations, &c.

His Lordship, before the case went any further, suggested that the difference between the amount lodged in court and the amount claimed by the plaintiff should be lodged in court, and so settle the case.

This course was declined on the part of the defendant.

Mr. Exham, in stating the case for the defence, commented on the course pursued by the plaintiff in revising the estimate without looking at the specification. After referring to the facts of the case, Mr. Exham went on to say that when there was a disagreement about the work between the plaintiff and the defendant, it was agreed by Canon M'Swiney to leave it to arbitration, and the arbitrator was to be Mr. Pugin. But when it was referred to Mr. Blake, the plaintiff's solicitor, he altered the agreement, and added to it a clause to the effect that, "whereas disputes had arisen with regard to the price of extra work done by Mr. Evans at the direction of Canon M'Swiney." Now, the question that was to be referred to Mr. Pugin was not at all in reference to extra work, but to the terms of the specification. Mr. Copinger, the solicitor of the defendant, objected to that statement, and then Mr. Blake refused to let the matter go to Mr. Pugin at all for arbitration, so that it was not the fault of the defendant that the matter was not settled outside court.

Mr. Barnett, Mr. Welby Pugin's representative, was examined, and deposed that he believed that Mr. Evans didn't understand the particular item of the specification in dispute; and although he did not feel himself competent to express an opinion as to the value of the work, he believed that 7s. 6d. per yard was not sufficient to pay for what had been executed. He considered that the contractor was bound to excavate through rock without being allowed anything extra.

Cross-examined by Mr. Clarke—I confess that I have found it rather hard to please Canon M'Swiney; Mr. Evans's work was really good; the defendant was commander-in-chief of the works always (a laugh). The witness then explained the reason that Mr. Pugin didn't come here was that he had been doing work for the church during the past three years, and had never been paid a penny.

His Lordship said that was an exceedingly proper explanation, and it was not fair to a man in Mr. Pugin's eminent position to have his reputation frittered away by stating that he would not attend as a witness unless he got a hundred pounds. It appeared now that Mr. Pugin had very good reason for not coming.

His Lordship also read a letter received by the plaintiff's solicitor from Mr. Pugin, in which he stated that he had been engaged for the last three years working for Mr. M'Swiney and could not obtain any money from him; that he had been offered £50, which would about pay for the paper used; and that he wished to have nothing to do with the matter.

Mr. Exham said he didn't mean to convey that Mr. Pugin wanted £100 for his evidence.

His Lordship said that certainly was what was conveyed.

Messrs. Walker and Simon Kenefick, builders, examined for the defendant—Had both tendered for the work; understood the work specified to be the same as that executed; had priced this item at 4s. per yard superficial.

Mr. Gilbert Cockburn, builder, and Mr. Arthur Dudgeon, surveyor, both of Dublin, examined to show that the work executed and claimed for as "extra" was work which they should consider he should have done under the specification; they considered the price of 7s. 6d. per yard sufficient to pay for what had been done; the excavation through rock they considered plaintiff should do under his contract at 6d. per yard cube.

In cross-examination both admitted that they had not seen the work.

Rev. Denis Canon M'Swiney, defendant, examined by Mr. Exham, Q.C.—Mr. Evans' original tender was £4,000, and it was reduced to £2,799; went to the site with Mr. Evans; saw two stones there placed together;

saw the rough face upon the stone, and remarked, "Surely, that is not hammer-dressed;" Messrs. Evans and Barnett said it was in accordance with the specification; I then gave in, and did not further interfere, except to object to the pitching in one instance; I never directed anyone to complain about the chiselling of the joints; they were chiselled; all the stones were dressed on the ground; met Mr. Evans and Mr. Barnett at the work, and Mr. Barnett then expressed his judgment that the work Mr. Evans had done was according to specification; Mr. Evans said it was more expensive than what he was bound to do; Mr. Evans proposed to leave the question between us to the decision of Sir John Benson; I declined, but I proposed to leave the question to the five other builders who had sent in tenders for the work, as they must have formed a practical judgment upon what they would give in as the work to be executed according to the specification; that was declined by Mr. Evans; Messrs. Kenefick and Walker were two of the five others who had tendered; Messrs. Pugin, Evans, and Barnett were in the office when I entered; I addressed Mr. Pugin, and said, "Mr. Pugin, I have just come from seeing a work of yours, at Ushaw College." Permit me to ask you two questions about the work executed at Ushaw College. I think this dispute of ours will be easily ended. "What are they?" said he. "May I ask you have you seen the work at Crosshaven, the work done by Mr. Evans?" He said, "Yes." "Do you remember the work you did at St. Aloysius College, Ushaw?" "I do," said he. "Are they of the same character?" said I. "Precisely," said he. "May I now ask," said I, "in what terms you described the work at Ushaw College?" "In precisely the same terms," said he, "as in your specification." "Well," said I, "I think that ends the question." Mr. Evans said something about the stone he had put in being chisel-dressed, and not hammer-dressed. Mr. Pugin then observed, "Mr. Evans's interpretation is right." I stood up rather astonished at that observation being made by Mr. Pugin, and I asked him did he mean that as a general answer on the whole dispute, after the answers he had made about Ushaw College?" He said, "No." "May I now ask," said I, "has Mr. Evans given an interpretation at all?" "Well, no," said he, "he has been describing something upon this paper" (pointing to a paper on the table.) The rev. gentleman went on to describe a visit with Messrs. Pugin and Barnett to the yard of Mr. Evans to see a sample of masonry, which all parties disapproved of. Mr. Pugin said—"Will you leave this dispute to me?" Mr. Evans said, "I will leave it to you." I said, "I will not leave it to you." You see I have just come from England, and am after a long and fatiguing journey, and I should wish to have a day or two to decide whether I shall accept this arbitration or not. On our way towards Mr. Barnett's office, Mr. Pugin said to me—"Would you not give Mr. Evans something to get over this difficulty?" "Well," said I, "I don't wish to appear to be hard; but I wish to get on with my church. The winter is approaching, and I want to have it raised at all events to the plinth. "Go down," said I, "now to Mr. Evans before you go home and offer him £50 from me as a bonus." I never authorised Mr. Pugin to offer him 10s. per yard. I object to pay 1s. 6d. per yard for removing rock in clearing for foundations, which he contracted to do at 6d.; there was no blasting done at all in preparing the foundations; I, early this year, began the work myself; I have not refused to pay him; I told him I would give him £50 when he should come over and give his evidence, and that I would pay him the rest of what I owed him between that and Christmas; I don't know how much I owe Mr. Pugin; I don't think I owe him £100; I am to pay him 2½ per cent. on the lowest tender; I am carrying on the porch and tower, which Mr. Evans was not to do; and, therefore, I suppose my whole account with him would be £100.

Cross-examined by Mr. Waters, Q.C.—When at the building, I gave such directions as I thought necessary. Amongst other things I directed the joints of some of the stones to be made more perfect. I don't know that by his contract he is bound to excavate only to a certain depth. The contract says something of an average depth of three feet, but that might be half a foot in one place and 15 feet in another—*which was the fact.* The joints are all chiselled. That is not included in the specification. Mr. Evans did it without any direction from me, or from Mr. Barnett, or anybody else. When Mr. Evans saw the facing for the first time, he did object to it as work he was not bound to do. He wrote to Mr. Pugin in these terms—"I hereby propose, &c.," making a new proposal to do the work up to the plinth in the same way for 15s., and over the plinth at 10s., with stones varying from 4 to 15 inches in height. Though I offered, through Mr. Pugin, £100 if he would complete his contract, I never gave Mr. Pugin any authority to change the character of the work. I never heard until yesterday that Mr. Evans and Mr. Barnett drew up that new proposal between them, and I was surprised to hear it. It was entirely changing the contract.

Mr. Murphy, Q.C., addressed the jury for the defendant, and Mr. Waters, Q.C., replied for plaintiff. He denied that any aspersion has been cast upon the Rev. Canon M'Swiney. He asked the jury to say, on the whole case, that the construction put upon the contract by the plaintiff's witnesses was the proper construction, and not that which was lying in Mr. Barnett's mind unknown to the plaintiff.

Mr. Barnett was recalled by the court, and stated that what he understood Mr. Pugin to say Mr. Evans was right in was—upon the technical objections to the specification, which was so framed as not be distinctly understood.

Mr. Evans desired to say that after Mr. Pugin had read the description given of the work and after he had seen the work at Crosshaven, he said in reply to Canon M'Swiney, that the work was excellent, and that he (Mr. Evans) was perfectly right in stopping the work; "for," said he, "if he had gone on with the work and afterwards demanded £300 or £400 from you, what would you say to him?" This he submitted, taken in conjuction with his offer of 10s. per yard for a simpler class of work, was an evidence that he was right.

His Lordship, in charging the jury said they should interpret the terms of the contract according to the ordinary rules of the English language. Acting on that principle he understood the words "limestone, in random courses, varying from four to eight inches in height," to mean that the courses should be random—that was, that each course should be in itself of a uniform height, not less than four inches, nor greater than eight; but that it was absurd to suppose—as the plaintiff's witnesses appeared to say—that the height of the stones in any one course should be allowed to vary from 4 to 8 inches. If that were done they would cease to be courses, and would become stairs. Instead of a flat course it would then be a steeplechase course (laughter). Again, he thought it was equally clear that the term "ashlar" applied to the stones and not to the courses. The whole necessity for this action was caused by a loose way of doing business. Why did Mr. Evans allow his foreman to go on with the work which he said he was not bound to do? Why did not he, in the first instance, tell his foreman what to do? And if it was right for him to have done that up to a certain point, why did not he let him go on to the end of the chapter? He quite agreed with Mr. Pugin that it would be much better not to finish the work than to bring an action afterwards which might last for three months. Half the dynasties of the world might be changed while they would be trying such an action as that. But if it were right to go on in that way—if he chose to let it go on without specific directions, there was much good sense then in saying, "You must be content with the construction put upon the matter by the persons whom you leave, by your tacit consent, to control the execution of the contract." The jury had heard excellent testimony on both sides, and it was for them to decide between the parties; but he could not but regret that that matter of £35 had not been left to Mr. Pugin.

The jury, after a brief absence, returned a verdict for the defendent, with costs.

Counsel for the plaintiff—Messrs. Clarke, Q.C., Waters, Q.C., M.P., and O'Brien. Agent—Mr. J. C. Blake.

Counsel for the defendant—Messrs. Exham, Q.C., Murphy, Q.C., and Johnson. Agent—Mr. W. R. Copinger.

COUNTY ANTRIM ASSIZES—RECORD COURT.

Bermingham v. *Tipping.*—Action to recover £38 2s. for work done and materials provided. Plaintiff is a building surveyor in Belfast, and the defendant is a builder carrying on business at Castledawson. The defence was that no work had been done, and no materials provided. It appeared that an agreement had been made between the parties that plaintiff should furnish a bill of quantities for works to be done in and about the building of a Presbyterian church at Portglenone, for which Messrs. Young and Mackenzie, of Belfast, were the architects, and defendant the builder. Defendant was to tender for the work, and the bill of quantities was to be furnished in a reasonable time previous to that fixed for receiving tenders. According to the custom of the trade, the contractor was to remunerate the surveyor. Defendant sent in a tender, and his estimate was accepted; but he refused to pay the fees, alleging that the bill of quantities was not furnished within a reasonable time, and that he was obliged to make out his estimate without them. Verdict for the plaintiff, with £29 damages and costs.

W. Morrow v. *Belfast Cement Company.*—Action by plaintiff, a builder carrying on business at Ballymacarrett, to recover a sum of £426 0s. 11d. from defendants, the Portland Cement Company, having their works at Greencastle. On behalf of plaintiff it was alleged that he agreed with defendants to build certain premises at Greencastle; that during the progress of the works he was wrongfully discharged from continuing them, whereby he incurred damages to the amount of £200; that defendants converted to their own use, and deprived him of the use and possession of his goods and building plant, for which he claimed £50; for work and labour he demanded £176 0s. 11d. Defendants denied having entered into the agreement alleged—that they did not prevent plaintiff from proceeding with the work—that there was a special clause in the agreement that the works should be carried out to the satisfaction of the company's engineer, and which plaintiff failed in doing. They lodged £50 17s. in court as sufficient compensation. After the arguments on both sides were concluded, an arrangement was come to, by which plaintiff was to receive £100 over and above sum lodged in court.

Repolishing Jewellery, Etc.—Mr. A. Allan, writing to the *Scientific American* says that after making a number of experiments he is convinced that a solution of cyanide of potassium in water is equal if not superior to any compound that can be used for cleaning jewellery, the liquid cleaning all those parts of the work which neither brush, buff, nor thread could reach. Here is the method: dissolve one ounce of cyanide of potassium in three gills of soft water, turn up the end of a piece of brass or iron wire into a hook, attach to it the article to be cleaned, and immerse it in the solution, shaking it backward and forward for a second or two, then take it out and rinse well in clean water. Wash it with warm water and soap to remove any film or cyanide that may remain; rinse again, dip into spirits of wine, and dry in boxwood sawdust. The advantage of dipping in spirits of wine is the immediate drying of the work without any sticking of the sawdust to it. When done with the solution, put it in a bottle and cork tightly. It may be used again and again for some months. Care should be taken not to wet the fingers with the solution and not to inhale the odour, as the cyanide is a violent poison.

THE CANON AND HIS ARCHITECT.

On another page we give a condensed report of the trial of the Crosshaven Building Case, *Evans* v. *M'Swiney*, tried at the recent Cork Assizes. A letter from the architect to plaintiff's attorney, and which was read by the learned judge, contained the following disclosures. We hope the architect and builder will in the end each receive his proper remuneration. Mr. Pugin writes:—

> From my past experience I can only say that Canon M'Swiney is the most extraordinary client I ever came across in my life. In various ways myself and Mr. Ashlin have had to expend, or are owed, upwards of £250 on Canon M'Swiney's church, five sets of plans having been prepared, besides which there are all the expenses, which cannot be less than £100. Up to the present time neither myself nor Mr. Ashlin have received one single shilling; you will, therefore, not be surprised that when the Canon was over here the other day I asked him for an immediate payment of £100, or a promise to pay that sum in a month; this he refused, and offered £50; as this would hardly pay for materials and paper, I laughed at him, and refused. From this you will see I am not treated as Canon M'Swiney's architect, who expects a fair return for his labour, but as one who had done nothing, and had no position. This being the case, if I am sent for I must charge my usual terms, namely—fifteen guineas a day and expenses. I would very much rather be out of the matter altogether. (Signed),
>
> E. Welby Pugin.

IRISH CIVIL SERVICE BUILDING SOCIETY.

The annual general meeting of this society was held on Saturday. The chair was occupied by

Mr. James H. Owen, M.A.

The secretary submitted the directors' report for the year ended 31st May last, from which it appeared that the receipts amounted to £57,547 12s. 7d., making a total of £187,278 4s. 10d. since the society was established six years ago. It further stated that the advances to members for building purposes and for the purchase of leasehold and freehold property, which in the five years ended May, 1869, amounted to £95,728 4s., had been increased to £127,638 14s. 8d., and the amount of assets, which for the period referred to amounted to £81,509 6s. 2d., had increased to £98,615 5s. 5d. After paying the usual interest of 5 per cent. on fully paid up shares at the same ratio, there remained an additional profit amounting to £2,382 4s. 8d., out of which the directors had declared a bonus at the rate of 2½ per cent., thus giving a return to shareholders of 7½ per cent. per annum, free of income tax, and leaving a balance of £483 13s. 7d., out of which the directors recommended that £450 should be invested in fully paid up shares of the society, in the names of the trustees, in a reserve fund.

The chairman, in moving the adoption of the report and statement of accounts, said that they would have noticed from the accounts an apparent falling off in the receipts, but that he was able satisfactorily to account for by the fact, not of a want of confidence in them as a means of investing capital, but because the directors had not deemed it judicious to take on a larger amount of capital than the market was readily able to absorb. And that they had been right in so doing had been shown by the fact that they had been able, while keeping within the sum which the bank allowed them, to overdraw their account, not alone to carry on the affairs of the company as heretofore, but to declare as large a bonus as in previous years, and lay past a very considerable sum towards a reserve fund. That the bonuses were recommended out of a clear surplus of profits was apparent on the very face of the accounts, as also by the auditors, who had made a very searching and practical investigation of their affairs. There was one act done last year that was of extreme importance in reckoning the position of the society—namely, that by which they altered the rate at which their annuities were to be valued to 7 per cent. By that change they had taken from the valuation all elements of profit—they merely took them now at cost price. With such a system, therefore, there could be no speculation,—the balance-sheet must show truly the condition of things, and there was no room, as in other societies, for drawing on profits "to be made," or discounting the future. To any one who had known the society from its first inception till the present, it must be matter not only of congratulation, but of surprise, that from the outset of their receiving money they should have succeeded in developing it from a concern which, according to his wildest imagination, would have had an annual income of £6,000 or £7,000 to one which had already invested no less a sum than £127,000—to a society whose paid up capital was now very little short of £90,000, and which would have considerably overlapped £100,000, only for the prudence of the directors in restricting it to what they saw could be properly placed upon the market. With regard to the balance, they proposed dealing with it thus: to pass a cheque for the amount in the names of the three trustees, and to issue debentures to the same extent, also in the names of the trustees, to be treated as if the property of any private individual. That was to say, they should bear interest and bonuses, these either to accrue from year to year to the reserve fund thus commenced, or be otherwise disposed of as the shareholders should deem fit. With these observations he would move the adoption of the report and statement of accounts.

Messrs. W. H. Hardinge, B.L., and Robert H. Jephson, M.R.I.A., were elected directors.

Messrs. H. M. Barton and R. F. Young were re-elected auditors for the ensuing year.

After discussing the alterations of rules proposed by the board of directors, a sum of £350 was presented to the directors, coupled with a vote of thanks for their services.

"BUTLER'S" MEDICAL HALL, LR. SACKVILLE-STREET.

Amongst improvements lately effected in our city, we feel called on to notice those just completed at the establishment 53 and 54 Lower Sackville-street, which has been for more than half a century known as "Butler's Medical Hall," having been founded by a respected citizen, the late Dr. Charles Butler, in the year A.D. 1817. Under the will of Dr. Butler, the concern has passed into the hands of Dr. Sandiman Bell, for many years chief assistant in the house.

In order to keep pace with the present go-a-head times, the proprietor wisely resolved to make sundry and necessary alterations on the premises, which have led to the outlay of a considerable sum of money. In the lower storey the party walls have been removed, and sufficient room afforded for the various "departments" of the business. In this, as in all the other portions of the building work, considerable skill has been displayed by Mr. Readshaw, the contractor—the task was of rather a difficult nature. To Mr. M'Anaspie, of Great Brunswick-street, great credit is due for the masterly manner in which he has carried out the external ornamentations, including balustrading, cornices, and statuary. Five colossal busts are placed on the pediment in front of balustrade on top. They are—in centre, Esculapius, the Founder of Medicine, and God of Physic; on the right and left are the late Dr. Butler, and Dr. S. Bell, the present proprietor; whilst on the extreme right and left stand William John Howard, Esq., and the "artist," Mr. Thomas M'Anaspie, draped in a tunic, and crowned with a civic wreath of laurel, symbolical of peace. The busts are placed on pedestals or dies, between balustrades; taken as a whole, they produce a very fine effect in this leading thoroughfare of our city. We should not omit to state that a "royal arms," of neat design, and also modelled in Mr. M'Anaspie's establishment, is placed in the centre immediately in front of second storey.

NOTES OF WORKS.

A cottage residence and farm offices are in progress of erection near Rathdowney, Queen's County. Mr. Joseph Maguire, 201, Great Brunswick-street, architect, and Mr. P. Dwyer, of Errel, Queen's County, builder

A villa house for James Morren, Esq., situate on the Temple-road, Upper Rathmines, is being erected under the direction of Mr. Joseph Maguire, architect; Mr. Hanlon, of Ranelagh, builder.

Anna Ville, Dundrum, County Dublin, the property of W. A. Hayes, Esq., is undergoing extensive alterations and additions, according to plans, &c., and under the superintendence of Mr. Joseph Maguire, architect; Mr. Lamb, builder.

A new dwelling-house is being built at Castlepole, Kells, for Henry Dyas, Esq. Mr. J. J. Lyons, of 25, Westmoreland-street and 9, Talbot-street, architect; Mr. T. Conolly, of Drogheda, the builder.

Plans have been prepared by Mr. Lyons, architect, for alterations to the mansion of Nathaniel Hone Dyas, Esq., Athboy.

A farm residence and offices are to be built at Oberstown, Lusk, for Mr. Walter Rickard. Mr. Lyons, architect.

Alterations and improvements are being made at the establishment of Mr. Keane, vintner, Upper Kevin-street, for which Mr. Lyons supplied the plans and specification.

Works in connection with the Traffic Manager's office, King's Bridge Terminus, have been carried out by Mr. Wm. Conolly, builder. Mr. Lyons, architect.

The new Catholic church of St. Anne, Bohernabreena, Co. Dublin, was dedicated yesterday by the Most Rev. Dr. Moran, Lord Bishop of Grahamstown, South Africa. The foundation stone of the present edifice was laid about two years ago by Cardinal Cullen, in close proximity to old building. The designs for the new building were furnished by Mr. J. J. M'Carthy, F.R.I.A.I. The style is French Gothic of the thirteenth century. It consists of nave and chancel with semicircular apse, north and south transepts with side chapels. It is lighted by five two-light tracery windows. The west end has a triplet of lancets and a Catherine wheel window above. The roof is open timbered, stained and varnished. The material used in the exterior is granite, finely chiselled.

On Sunday, the 7th inst., the new church attached to the Convent of the Dominican Fathers at Newbridge, County Dublin, was solemnly blessed. The church, begun about three years since, has been erected from the designs of Mr. J. J. M'Carthy. The style is early Gothic. It comprises a nave 90 feet by 30 feet, terminated by a large semicircular apse, and lighted with lancet windows. Separated from the nave by pillars of polished Cork marble, there is a chapel dedicated to Our Lady of the Rosary. Two beautiful stained glass windows (one representing the Ascension our Lord, the gift of a lady), have been executed by Messrs. Earley and Powells, of the Camden-street Works, in their usual artistic style.

BALLY-ATH-CLIATH.

THE writer in the *Builder* has not yet ceased to pour out his store of censure on "the powers that be" in our city. In his paper in Saturday's issue he fearlessly asserts that "Dublin is not half cleansed!" He names several districts in which "corporate *vigilance* can never be detected." Certain it is that the

"Chiel has been amang us, takin' notes,"

and however shrewdly we had previously conceived such to be the case, we are confirmed in our opinion when the writer tells us—"We have walked through these quarters, and examined the house property, questioned the dwellers as to their wants, and during our visit seen sufficient with our own eyes to justify every word we have written or may write."

Is it probable that the *Times* Commissioner could better have fulfilled his task, if employed *specially* to visit and report upon "The Condition of Dublin?"

"Many improvements," continues the writer, "that it would be desirable to have carried out are hanging fire at present. Neighbourhoods are sinking lower and lower, north and south, for want of proper outlets and leading thoroughfares. One great crying shame is the want of a direct route from Stephen's-green, or that quarter, to St. Patrick's Cathedral. Here is a costly architectural pile buried in the lowest and meanest quarter of Dublin, hemmed in on all sides by low and dilapidated tenements, forgotten almost and unvisited, because the road to it is tortuous, and through dingy bye-streets. By a very little amount of energy, and an avoidance of any serious expenditure, a new street could with facility be constructed, leading direct from York-street, across Aungier-street, Whitefriar-street, and thence, with a slight curve (entailing only the demolition of a small number of houses of no great value), to St. Patrick's Cathedral. This route would give a line of communication nearly direct from Stephen's-green to Patrick-street, and open up a neighbourhood sorely in need of trade, light, and air, and other sanitary requisites. The new street formed by the carrying out of this measure would be the pioneer of future improvement in that part of the South Dublin neglected quarter, and it would lift the lorn and woe-begone 'Liberties' from a region of eclipse into a region of light."

With respect to his queries as to the railings in front of Old Trinity, and the "*dead wall*" in College-street, we are happy to inform the writer that within the past fortnight the works have been in progress. The blocks of Ballynocken granite for the base are on the ground; the foundations are laid about ten feet in. We regret that they have not been laid still nearer the frontage line of College, and with a lesser curve towards street.

Respecting our squares we are told that—"The fine public squares of Dublin should not exist as a monopoly, but should be thrown open, like those in the French capital. No fear need be entertained, that if free to the working classes outrage would result. The parks of London are free to all, yet neither flowers nor shrubs are destroyed. Dublin, it is true, can boast of one magnificent park, which, for extent, has no equal in Great Britain; but the Phœnix Park is outside the city, and is a park which, in its management and control, is open to objections. It is a great boon, however, to have such a free park on the borders of the city, and to its existence we are certain Dublin is much indebted on the score of health and delight."

HEALTH OF DUBLIN.

IN the Dublin registration district (which extends over an area of 9,745 statute acres, and had, by the Census of 1861, a population of 314,409), the births registered during the week ending August 6th, amounted to 157. —82 boys and 75 girls. The average number in the corresponding week of the years 1864 to 1869 inclusive, was 166. The deaths registered during the week were 110—55 males and 55 females. The average number in the corresponding week of the previous six years was 130. Three deaths resulted from fever, viz.:—1 from typhus, and 2 each from typhoid or enteric. Scarlatina caused 3 deaths. Two deaths each from croup and whooping cough were registered. The deaths of 4 children and 4 adults resulted from diarrhœa. Bronchitis proved fatal in 8 instances, and pneumonia or inflamation of the lungs in 1. Twenty persons died from phthisis or pulmonary consumption. Eight deaths were ascribed to convulsions. Apoplexy and heart disease caused 2 deaths each. Four persons died from cancer. Seven deaths were the result of violence, viz:—3 from accidental causes, 2 cases of homicide, 1 suicide, and 1 execution. Thirty-two deaths occurred in persons under 5 years of age, and 2 in persons who were aged 60 years and upwards.

MISCELLANEOUS.

FINE VARNISH FOR WOOD.—The varnish applied to Connecticut clock-cases, wooden picture-frames, and other cheap objects, is made by mixing two pounds of copal varnish with half an ounce of linseed-oil varnish, and the mixture is shaken often to mix it well. The wood is prepared with a thin coat of glue-water, rubbed down with fine pumice-stone. In light-coloured wood, a light pigment, such as chalk, is added to the glue-water; in dark wood, an equally dark pigment is added. After drying, the articles are rubbed with a solution of wax in ether, thereby acquiring a high polish.

CHATHAM DOCKYARD EXTENSION WORKS.—The Director of Works of the Navy has selected Harding's Flexible Roofing for covering the whole of the erections (order No. 611) on these works, owing to the satisfaction given by that supplied to the same yard about three years since. Samples &c., at 20 Nicholas-lane, London, E.C.

THE ART CHALLENGE ACCEPTED.—It is announced that Mr. Hughes's challenge to paint "the best picture, against time, for £1,000 a side, with any artist of any country," has been accepted by an American artist, and that he, as well as the challenger has signed the preliminaries and deposited £1,000 in the Bank of England for the match, to come off, on or about the 13th inst., in the saloon of the Palais Royal, Argyll-street, Oxford-circus! Who is to decide whether the things produced are pictures or not?—*Builder*.

THE SUEZ CANAL.—With regard to ths Suez Canal, Sir D. A. Lange has furnished the following particulars relating to the traffic and receipts:—"The total number of vessels which have passed through the maritime canal is 368; of these 130 traversed during the four days of the inauguration, exempt from payment of dues, leaving 238 ships, representing 196,428 tons; when to this is added the tonnage of small craft, viz., 6,498, the total amount on which dues have been paid is 201,926 tons, composed as follows; 153 British ships, 184,712 tons; 35 French ships, 33,804 tons; 19 Egyptian ships, 12,760 tons; 9 Austrian ships, 5,948 tons; 7 Italian ships, 3,717 tons; 4 Turkish ships, 2,548 tons; 3 Spanish ships, 732 tons; 1 Russian ship, 480 tons; 1 Indian ship, 686 tons; 1 Chinese ship, 37 tons; total, 233 ships, 195,428 tons; including the fractional tonnage. The receipts in June amounted to 817,117f. (£32,684), being nearly double those of the preceding month, and the total revenue derived from all sources, made up to the 30th of June, amounted to 3,244,616f. (£129,784). Fourteen dredgers are at present employed in widening the "bends" and making such improvements as are deemed necessary for faciliating, in a still greater degree, the navigation through the canal, and obtaining a uniform depth of 26 English feet throughout."

A "**WHIRLWIND**"—On Thursday last (says the *Kilkenny Moderator*) to the great astonishment of a number of people who beheld the phenomenon, two hand-stacks of oats were suddenly blown away from the middle of a field on the land of Mr. C. H. Prim, at Nore Cottage, Dunbell. It was a particularly calm and sultry day, and not a zephyr stirred the foliage of the adjoining plantations, when, just about noon, the two stacks of oat-sheaves shot up into the air to an elevation of about twenty feet, and were then wafted about in every direction, falling scattered through the field. One sheaf was carried over a high hedge sixty yards off, and deposited in a barley field; and, singular to say, a single sheaf of barley, from a stook in that field, was carried in an opposite direction over the same hedge to a distance of thirty yards into the oat field. The bottom course of sheaves in each of the two oat-stacks remained just as they had been laid on the ground, and all the other stacks in the field surrounding the two referred to on every side were quite undisturbed; whilst all the barley stooks in the adjoining field remained as before, with the exception of the flight of the single sheaf. A number of harvesters in the barley field, who witnessed the strange occurrence, did not experience any change whatever in the atmosphere, or feel the slightest current of wind.

THE MONTIGNY, as improved by the suggestions of Major Fosbery, consists of a group of barrels contained in a wrought-iron tube, and mounted on the same general principles as an ordinary field gun. Behind the barrels is a massive breech action sliding between heavy iron plates, controlled by a jointed lever, and containing a simple contrivance for the separate and instantaneous ignition of the cartridges. The cartridges, which are central fire, are carried in steel plates, perforated with holes, corresponding in number and position to the chambers of the barrels of which, when in position, these holes form portions, being bored and finished with the same tools, and at the same time as the chambers themselves. This plate, being charged and introduced into the breech action, is pushed forward, so that each catridge enters its appropriate barrel by simply depressing a lever. Another motion of the hand secures it in its place beyond all chance of accidental disturbance, and at the same time sets the weapon at full cock, ready for firing. This part of the operation having been accomplished, the gunner grasps the firing handle on the right side of the gun, and awaits the order to fire. One second of time is sufficient for a complete revolution of the handle, thus discharging the whole of the thirty-seven barrels of which the weapon consists, though each may be fired separately and at any desired interval. When the last barrel has been discharged, the breech lever is raised, and the plate lifted from its grooves, carrying with it the empty cartridge cases, which are replaced by loaded ones. The operation can be repeated any number of times, and twelve rounds have actually been fired from the gun in a minute, throwing of course 444 rifle balls in that time. The balls weigh 600 grains, and the charge of powder is 115 or 120 grains. The Boxer cartridge serves admirably.—*Broad Arrow*.

ILLEGIBLE WRITING.—In the Sheriff's Court, in an action brought against the proprietor of *Lloyd's Paper*, for damages for not inserting a newspaper advertisement correctly, the verdict was for the defendant, with costs, on account of the illegibility of the writing.

THE MONT CENIS RAILWAY COMPANY.—Vice-Chancellor Malins has had before him a petition to wind up this company, on the ground that their railway has been worked at a loss, the expense of working it in the winter months being greater than the profits earned by working it in the summer months. By consent of the parties, Mr. James Atkinson Lougreach, the present manager of the company, has been appointed provisional liquidator, and the rest of the petition has been ordered to stand over till November.

WHITWORTH SCHOLARSHIPS.—The practical examination of workmen and students for these scholarships has been fixed by Sir Joseph Whitworth to take place at his works, at Manchester, at the 30th of August and the 1st of September next.

TO CORRESPONDENTS.

J.R.L.—We do not feel at liberty to publish in our columns all we know respecting the transaction you allude to It may be true that some of the parties will not come out blameless, or with credit. The defendant has, as we are informed, in the first instance, to pay all the costs of the action at law, and then to complete, at his own cost, the works according to the specification originally prepared, and under which he tendered some three years since. We learn that the services of another architect have been secured.

BANKRUPTS.

Patrick Lambert, Askinagap, Co. Wicklow, farmer and road contractor.

Simon Kenefick, Clarence-street, Cork, builder and lime-burner.

INSOLVENTS.

Denis M'Auliffe, Kilrush, Co. Clare, shopkeeper, fisherman, and ship-carpenter

Joseph Sutcliffe, Riversdale House, Drumcondra, furniture dealer and timber merchant.

Matthew M'Veigh, York-street and Pilot-street, Belfast, iron and wire worker

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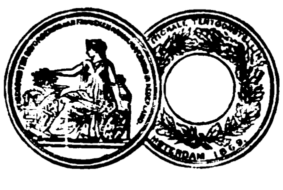

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TESTIMONIALS.

From WILLIAM TITE, Esq., M.P. *for Bath, and Architect of the Royal Exchange, London.*

House of Commons, 2nd March, 1864.

DEAR SIR,—In reply to your note, I beg to say that I have used both the sorts of Cement manufactured by your firm, and that of Messrs. Francis and Son; I mean the Cement usually called Roman Cement, or the more recent introduction of Portland Cement. I believe these Cements, manufactured by either of your firms, to be equally good I know no difference, chemically or practically, between them; and I should use, and authorize to be used indifferently, either one or the other. You are at liberty to use this note, if you think it necessary.—I am, Dear Sir, your obedient servant,

Messrs. White & Son. (Signed) WILLIAM TITE.

From R.O. MINNIE, Esq., *Surveyor to Board of Ordnance, London.*

War Office, Pall Mall, London, S.W.,
3rd March, 1864.

GENTLEMEN,—In reply to your request, I have much pleasure in stating my favourable opinion of the quality of your Portland and other Cements, which have been extensively used in the Public Works connected with the War Department at home and abroad, especially in several of the fortifications now being erected in this country. On all occasions within my knowledge the quality has been equal to that of any other manufacturer, and has given great satisfaction.—I am, gentlemen, your obedient servant,

(Signed) R. O. MINNIE, Surveyor.

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The Irish Builder.

Vol. XII.—No. 257.

The Advent of the New Vitruvius.

THESE are ominous days for the future of architecture. There are enemies in the camp, the vandal is engaged in strategic movements, and if the profession does not at once gird up its loins and buckle on its armour in self-defence, the Rubicon will be crossed, and the New Vitruvius will dictate terms to the Royal British Institute. For many years matter-of-fact people have foreseen the disaster, but they have been powerless to stem the torrent aside. With our eyes open, be it confessed, we have waited and grumbled, but all for no purpose. We have battled hard for our constituency, laboured hard for the interest of our order, struggled desperately hard to keep our building body and architectural soul together, but after all we have to strike our centres, court death under the weight of the *débris* of our fallen edifice, and henceforth also act as Caryatides of the New Style. Modest merit triumphs, and the "Handy Andy" of proverbial memory brandishes the T square, boxes the pair of compasses, and writes his specification in Indian ink *a Mavrone.* Architects to the rescue, while yet a vista remains open, and the cause may yet be saved. The cancer is still confined to the realms of paper, lath, and plaster, where the subsoil is not cut up by mischievous drainage, and where the sewage is too precious a deposit to be parted with by landlord or tenant. Mr. Moneygrubb is the best judge of what suits him, and he doesn't understand why the plans of his "factotum," improved upon by suggestions of his own, will not answer quite as well, when carried out, as those of Theodore Tryglyph, Esq., F.R.S. We admire Mr. Moneybags (Mr. Moneygrub we mean), and we must say that he is perfectly justified in acting his own architect and builder. We will not be one of those to feel the least jealousy at his innovation; and we trust, for his own sake, and for the safety and salvation of his tenants, that his house-building will be a success. Example, it has been truly said, teaches. When the head of a public department gives a lesson in practical economy to her Majesty's subjects, what less can her Majesty's subjects do than follow their leader? If people can buy a suit of clothes cheaper from one maker than another, and believe them to be equally good, they are justified in changing their tailor; and so with their shoemaker and hatter—then why not with their builder? No matter about the catcall of "machine work." If houses are not built by machinery, they soon will. Just so. And if builders can dispense with y. architects, and supply their own plans and drawings to their customers we do not see the reason why such an "imposthume" as an "architect" should be stuck like a barnacle on the back of the building profession. So thinks Mr. Moneygrub and his allies, so think the "Jerrys," and so declares Mr. Vitruvius. It is no matter what we think, as we are "nobodies," and people of this class, everybody knows, are "know-nothings."

We have fallen evidently on gloomy days. The Gandons, the Cooleys, the Ivorys, the Morrisons, and the Johnstons have departed. It is well for them they are at peace in the grave. We want no more Courts of Law, Custom Houses, Parliament Houses, Royal Exchanges, Post Offices, Rotundos, or College Chapels. The granite bed of Dalkey may lie undisturbed; Ballynocken quarries have nearly heard their last echo, and the Marble City may toss up with Killaloe and Galway for the melancholy honour of contributing the last mortuary slabs for the unmonumental graves of our architects.

Brick, brick, paper, lath and plaster, felt and asphalte, corrugated zinc, and tarred weather boarding is the order of the day. "Every one his own architect" is but only one advance on every one his own lawyer and doctor. Ho! ye shop-front designers and gin-palace builders, ye who covet no premium nor yearn for a percentage, ye who are content to have a "draw" according as your work proceeds, hearken to us. A Lord Mayor's requisition would be just the thing. Rid yourselves, and for ever, of this architectural incubus that presses you down, that will not even let you design an ogee bracket or a simple console, or alter the proportions of your white deal frieze or entablature to harmonise with your own just perceptions of light and shade twixt plaister and pedestal. Out upon them. Thanks to her Majesty's Chief Commissioner — who caught our "Family Architects" a tripping, and gave them their portfolio—a new era is inaugurated, and "the New Vitruvius" will soon be in office. At the new Architectural Designs' Office, plans and drawings will be procurable for ready money, to suit any taste or situation. Specifications, too, can be had by the yard. It will be a great relief to the building mind, —particularly those who are unable, or who have not sufficient time, to act their own architect—to have, at a nominal cost, what they require without any premium, and with liberty to retain the drawings. This will be considered, no doubt, a step in the right direction. Its adoption generally by the community will put an end to a monstrous abuse; will remove a restraint upon labour, and relegate to their proper position a dictating and ambitious clique who arrogate to themselves an exclusive knowledge of the canon of true art, and the fundamental principles of architecture.

What think our friends? It rests with them to say whether we have been engaged in rightful service, or dealing with men in buckram. We are not conscious that we have been engaged in any species of knight errantry. We hardly dream, for, intermittingly as we write these lines, we drop our pen and rub our eyes to see that they keep awake. There are moments, however, in the life-time of individuals when they feel what is passing through their mind is like unto a dream. If we dream, we only hope that our published reverie will prove of some slight public advantage. If so, we shall apologise for the nonce for being found so agreeably napping.

WHAT SHALL BE DONE WITH OUR SEWAGE?

This is the question of questions. As year after year our population increases, this question is brought home to the mind through our very noses—What is to be done with our sewage? As regards the city of Dublin, the state of the Liffey—the main sewer of the city—is simply appalling. It is almost impossible to find an epithet to express that condition, even if terms of deprecation were not already exhausted. This kind of artillery has been employed long enough, and it is time to come to close quarters, for the enemy is advancing on us rapidly. We, therefore, again ask the question—What is to be done with our sewage? The question, although intimately connected with the state of the Liffey, is quite another question to that—What must be done with the Liffey? As to the horrible condition of the Liffey, the idea of the purification of that is simply hopeless and absurd so long as the sewage of the city is allowed to go into it. Any one with two grains of sense will see that to attempt to purify the Liffey with the sewerage as it exists would be as reasonable as to throw money into that foul and fetid stream in expectation of its waters becoming limpid. Those who entertain any vague notion of this kind ought to be aware that the question actually resolves itself into this form—What shall be done to the people who foul the Liffey? Indeed all ought to recognise the fact, that now the state of the streams of large towns really resolves the question into one of a personal character as to the state of cleanliness of the community, and whether it be desirable for the local governments of towns to enforce the question on house occupiers. We say "desirable" because we know how difficult it is to enforce any regulation which seems to interfere with the liberty of the subject. That it certainly is desirable to prevent not only mill-owners and companies, but also individuals and occupiers of private houses from adding to the impurity of rivers, is indeed most evident, if it be possible. And why should it not be possible? In the future it will be found to be both necessary and possible. The gigantic schemes already adopted, and those projected, for the purification of rivers, the deodorization of sewage, and the irrigation of land with sewage matter, involving as they do such an enormous outlay, will, in the course of time, be acknowledged to be but a mere evasion of the question, even supposing them to work with advantage—just, in fact, a sort of make-shift manner of dealing with the question,—not a removal of the evil, but only shifting it to other people's doors.

Hitherto it plainly appears that not only has there prevailed a system of intense filthiness, but one of thorough selfishness with regard to the reckless manner in which the rivers and brooks are polluted and rendered destructive to health. In Dublin we feel the full force of this wretched system, and, with one of the finest cities in existence, have to endure the noxious exhalations of a river that has been rendered the most detestable on earth, without any means of abatement of the nuisance.

In order to remedy the deplorable condition in which the discharge of sewage has left the streams which flow through large towns, most costly systems have been adopted. First, there is the plan of deodorizing the sewage before it falls into the river; then there is the plan of conducting all the sewage of the town into main drains, emptying themselves beyond the city; and a third plan is that of devoting an area of land outside the town for irrigation by the sewage matter. All these systems, entailing as they do so much cost, do but deal with the water after it has been polluted. What would be the effectual remedy, and what may ultimately be found the most simple and least costly, would be to arrest the discharge of all excrementitious matter into the rivers—to preclude the shameful necessity of making a river the main drain of a town, and at the same time to render quite unnecessary those monstrous contrivances of main drains, those detestable and costly contrivances for pumping liquid pollution, or those odoriferous schemes of land irrigation with the pestilent liquid.

The question propounded at the head of this article—What shall be done with our sewage?—leads to the consideration as to whether we ought to have that sewage to deal with. This question meets with a decided negative. We earnestly call the attention of our heavily-taxed citizens to the fact that we pollute the stream of which we complain; that, in order only to abate the nuisance or remove it to a little distance, enormous cost must be incurred; whereas, by dealing with the cause instead of pottering at the effect, we shall render both our homes and the town more healthy. The use of the water instead of the earth closet is the principal cause of the dreadful state of the rivers flowing through our large towns. When corporations make proper sanitary regulations, and have an inspection of nuisances that will prevent nuisances from being made, we shall perhaps see an end of this system. The Liffey is, no doubt, the greatest nuisance made in Dublin, but it is only the aggregate of all the lesser nuisances to which we allude.

IRELAND IN THE WORKING MEN'S INTERNATIONAL EXHIBITION.

THIRD SPECIAL NOTICE.

The war fever has militated against the attractiveness of the Workmen's Exhibition to a considerable extent; and, added to this, its not being in the aristocratic West End, it has not become a fashionable promenade for the "upper ten" of Belgravia and Rotten Row. From the war excitement the London Press have been sparse in their notices, so the exhibition and the exhibitors have suffered. The day attendance of visitors is small compared with the evening, the working classes of necessity having no spare time for any other but evening visits. To young men of a mechanical and inventive turn of mind, or to workmen intent on improving their knowledge of their respective arts, a visit to the Agricultural Hall will be wisely and profitably spent. The most casual visit will not fail to afford some instruction or suggestion, or something useful, to a thoughtful observer, whether he be a gentleman of "no calling" or a mere workman. In such articles as are on exhibition from Ireland, a great versatility of talent is shown; and we only regret that the contributions from this side of the channel were not more widely representative of the country at large. It is certain that from some defects of organisation and arrangement—or, shall we say, want of arrangement on the part of the council,—the exhibitors in general are not served well, and a feeling of dissatisfaction has arisen, and pretty markedly developed itself. Some of the exhibitors have already held a meeting, at which Mr. Charles Pelling, of Belfast (some of whose goods we have already noticed), was chairman. At this meeting several suggestions were made and resolutions passed, with a view to the better management of the exhibition in the interest of the exhibitors.

Since our last notice we have carefully examined a few more Irish exhibits worthy of more than honourable mention, and of these we shall now treat.

An Irish plough, the workmanship of Mr. Johnston, of Castleblaney, County Monaghan, is a superior farming implement of its kind. It is all wrought by hand labour; file, vice, and hammer alone were enlisted in its execution. The Irish plough presents some features worthy of note. The mould board can be expanded or narrowed by a screw to suit any breadth of furrow, and the draught of the horses or horse, as the case may be, can be changed to a central or sideral action by an improvement in the yoking gear. The depth or shallowness of the furrow can also be regulated similarly. The maker has christened his piece of handicraft "Erin's Plough." It is highly burnished, and having no coating of paint, it presents more of a polished steel surface than malleable iron. This extremely pretty and well-made plough is to be presented to Mr. Gladstone, and the Premier has expressed his willingness to accept it.

Mr. William Clelland, of Belfast, has some excellent specimens of illuminated printing, the subject matter being a text from Shakespeare. Mr. William Ellis also, of Marcus Ward's, Belfast, exhibits some magnificent illuminations on vellum. Both of the above examples of the printing art of the northern capital are most praiseworthy. Illustrations of a monograph on fossil crinoids and illustrations of a paper on holtemia, a sort of new sponge, by Dr. Wilde Thompson, are also shown. The drawings illustrative of these curiosities of marine animal and vegetable organisms in the deep ocean were executed on stone by J. J. Wylde, lithographer to Ward, Brothers. Dr. Thompson, it may be remembered, formed one of those appointed on the Deep Sea Dredging Expedition.

A beautiful specimen of Irish silk embroidery is exhibited by the Messrs. Chambers, sewed muslin manufacturers, Sackville-street, Dublin. It is a single specimen of its kind from the Irish capital. The subject work is a bird and flowers, and most admirably is the work done; but it stands alone, like the last rose of summer, bringing up welling recollections to our memory of days departed, and of a desolated "Libertie" that once echoed with the busy hum of the silk weaver's loom, and of many a soft Irish maiden's hand that worked—nor worked in vain—on silk embroidery, under the bountiful patronage and to the ready orders of a native gentry and aristocracy.

Mrs. Samuel Rushton, of Princes-street, Belfast, shows her artistic capacity in Berlin wool. "Mary Queen of Scotland at the Battle of Langsyde mourning the death of Douglas," is faithfully and gracefully rendered. The characters are many, and all are faultlessly worked. This piece of Berlin wool work of Mrs. Rushton is nothing short of a work of fine art, well conceived and admirably wrought out. It ought to fetch a very high price, and no doubt would if offered for sale within a circle capable of appreciating its intrinsic value alone.

Some very excellent designs for linen and cambric handkerchiefs, for embossed work, is exhibited by Mr. John Page, of Belfast, and we have some admirable proofs of the Belfast photographic art executed by Mr. James A. Cumine on handkerchiefs. These specimens on cambric and linen are nearly equal in sharpness of outline and finish to those printed on paper. In the same case a very finely carved block, the work of Mr. James Harvey, is on view, as a specimen of the kind used in printing those very beautiful designs on Belfast fabrics.

In fine arts, a very good crayon is shown by Miss Kelly, of Belfast. It represents her sister, and it shows a thoughtful Irish face. A few more subjects, comprising fruits, flowers, and landscapes, are here, by the same young lady. We may here remark she is the daughter of a worthy northern father, who deserves well of his country, and who on more than one occasion was ready with his purse and counsel to forward any movement for the good of Ireland in general, or Belfast in particular.

The photograph of the late Belfast Workmen's Exhibition, by Mr. James Magill, is very well taken, and illustrates a very interesting group, possessing, no doubt, powerful local attraction.

In previously noticing the goods exhibited by Messrs. Pelling and Co., we forgot to mention the different hands who contribute their share to what is shown by the firm. The embroidery design is by John M'Kenzie, of Bangor; the handkerchiefs, Miss Baxter; skirts, Miss Moore; and the sewing-machine work, Miss M'Farlane.

A model is mentioned in the catalogue of the Belfast Workmen's International Exhibition. This model, however, has not arrived yet. There are a few more articles which, though mentioned as on view from the north of Ireland, we have failed to find them.

Mr. A. Ferguson, a builder's assistant, of Windsor-street, Belfast, sends a pretty octagonal cage of polished mahogany and wire.

We have nearly enumerated all now that is worthy of note from Ireland. The Belfast exhibits, as may be seen from this and our previous notices, are the principal. The articles from Dublin are very few, and as for Cork, Waterford, Limerick, or Galway, they may be said to be simply nowhere in the Workmen's Exhibition. The capital of Ireland could have sent various articles, but she has not. What has been shown on behalf of Dublin, with scarce an exception, has come from a working employer or *bonâ fide* workman. North and south of England and the midland, as well as London, has sent admirable specimens of coach, carriage, car, cart, and locomotive building; and this is what Dublin could also have done readily. The Messrs. Hutton and Long, and other equally well-known firms in Dublin, could, we are sure, have sent examples of Dublin coach building fully equal to those on view; but neither cab, cart, bicycle, wheelbarrow, or handbarrow has found its way from Dublin to Islington. Nor have we been able, during our repeated visits, to discover any kind of mechanical or building appliances on the part of this city. In the matter of fire-arms and projectiles, the Belfast section shows at least one instance; but Dublin, always famous for its gunmakers—viz., the Rigbys, Trulocks, Kavanaghs, &c.,—none of them are represented. Belfast and Coleraine show furniture; but with all its cabinet manufactories, Dublin is not represented in a sideboard, a dressing-table, or even a hat or umbrella stand. We mention these things because we may as well allude to it as wait for others to remind us—aye, and they have already across Channel in more places and on more occasions than one alluded to the supineness and want of public spirit shown on the part of Dublin manufacturers. A reason, no doubt, can be advanced in this city why we are not represented in the Workmen's International Exhibition, and this reason may seem plausible or cogent enough in the way it may be viewed on the banks of the Liffey. It is not, however, so ready to prove our case across Channel by the same line of argument as we convince ourselves at home.

As far as Ireland is represented, though small in quantity, it can bear a comparison as to quality. What has found its way from this side to the Agricultural Hall is good—practically good—and useful. We shall not hesitate to say that there is much goods of an indifferent kind which have reached Islington little better than lumber, but a little lumber must be expected in all exhibitions of this kind, for a reluctance will be always felt by committees to act the hypercritic with workmen who make commendable though unsuccessful attempts in workmanship.

We have marked down for notice some articles of Gothic church furniture and decorations, and we have taken a few notes of some building appliances, the utility of which we will submit to comment. In the Netherlands section and in other sections there are articles which have relation to architecture and its cognate branches. We will endeavour to deduce a lesson from their examination that may be useful to our future workmen in affording them technical instruction, and help in moulding them into better shape, and of giving them the status of ready and skilful craftsmen. Example, it is said, teaches truly. The study of good models must eventuate in giving the artist better ideas, and of spurring him on to a rivalship. Exhibitions of skilled labour in variety must have a similar effect on the mind of the thoughtful and inventive workman. The present International Exhibition, with its many drawbacks and want of proper organization, will withal be a successful pioneer to more successful efforts.

We shall close this notice by observing that we hope that all the awards to the exhibitors will be justly and honourably made, and that no back-stair influence will be used or exerted to deprive the humblest Irish, British, or Continental exhibitor from obtaining that fair degree of merit which his work entitles him to.

Since our last visit there has been an accession to the Belfast section by a new case filled with Belfast mineral waters and summer beverages. The proprietors and exhibitors, Messrs. Brown, Taylor, and Hill, have been very successful in the production of these northern drinks. The samples they show are beautifully got up. They show also, on the part of Sir John Arnott, for whom they are the Belfast agents, stout and Irish "cooper."

The exhibitors of Belfast, and Ireland in particular, are much indebted to Mr. M'Creery, the superintendent of the Belfast section, for the care and interest he takes in making their exhibits attractive, and of being ever ready to explain to visitors or intending purchasers any particulars needed. Through his energy some goods that were too late were afterwards admitted into the Agricultural Hall.

Irrigation and Sewage.—The proprietors of the *Gardener's Magazine* have offered a prize of Twenty Guineas for the best essay on "Irrigation, with especial reference to the utilization of Sewage."

TECHNICAL EDUCATION OF THE ARTIZAN.*

Until all our workshops become, in theory and practice, normal schools of art, the proper education of the artizan will not be effected. Skilled workmen, workmen who can plan out their work, as well as execute it with an artistic finish, are greatly in the minority in all our workshops. Experience can produce an ordinary good workman, but no length of experience or following will compensate for the want of technical knowledge. To the carpenter, joiner, mason, stonecutter and carver, and the plasterer, technical education is all-important. Parents who intend their sons to follow any of these trades ought, as a requisite, to see that their youths at school learn arithmetic and geometry. No tradesmen are more often called upon to work out in practice the theories they have learnt in school than building mechanics. . . . . We consider that a journeyman carpenter, joiner, or mason, who requires his work "laid out," or "struck out," for him, is little more than a machine. It may be, and is, necessary, in large workshops, that the foreman should give directions, and furnish a working drawing, pencilled out on a piece of board. But though this may be necessary on the part of the foreman, so that the proper organization of labour in the workshop may proceed regularly, the workman should, if necessity required it, be capable of doing all that his foreman can do. The workman should thoroughly know the principles of his trade, as well as its practice; for occasions may and will arise when he will be called upon to trust to his own mental resources, away from his companions by the bench. The making of a sash, the framing of a door, the preparation of boxings and shutters for windows, and their fixing, comprise but a small amount of a joiner's work; in fact, this is merely what any apprentice of short standing can do. Give any workman a template or mould, and he must be very stupid indeed if he cannot properly prepare its counterpart. We wish to see our building artizans educated to the standard, that when the plan and detailed drawings of a house are put into their hands, they will feel no difficulty in undertaking them. Every mason and carpenter deserving of the name, if required, should know how to work to or from scale, and should find no difficulty in making working drawings from the architect's plans and instructions. . . . .

It is indispensable that every building artisan should have a knowledge of "lines." The carpenter, mason, bricklayer, or stonecutter who is ignorant of them is certain to be an inferior hand. If the workman can draw or properly "lay down" on a piece of planed board the work he is about to execute, he will feel no difficulty in his way, and will lose no time. If he cannot do so, and has no one near who can do it for him, he is certain to lose his time by a system of "groping," working by "rule of thumb," and undoing again and again what he has spent several hours over, doing wrongly.

No workman can put up an intricate roof or staircase who does not understand the setting out of the templates or moulds for its working, or for the "cuts;" and how many times have we not been a witness to the wasteful cutting up of perches of scantling to arrive at the proper "cut" for a rafter or purlin against the hip rafter. With a little technical acquaintance with "lines," the workman could set the proper bevel, and apply it to the end of his piece of scantling, and the work would be accomplished at first cutting. A knowledge of the development of curvilinear surfaces is requisite for both mason and joiner, and we think no better novitiate could be for the young carpenter-apprentice than to keep him, for the first year, in the workshop, in learning the principles of construction by the aid of drawing, and then making him, according as he understood the theory, work out the practice in the framing or putting together of articles entailing but a small waste of material. His time would be more profitably spent in this way than in spending his first twelvemonth in boiling the glue pots, heating the workmen's breakfast cans, and running on endless errands for the workmen. Under the eye and guardianship of intelligent foremen, the young apprentice could be moulded into the making of a good and skilled workman; and, in the absence of a special school of art for the technical education of the artisan, much and lasting good might be thus effected. . . .

Ordinary schools are plentiful enough now, and no boy should be put to learn his future trade without a tolerable primary education. But what is a tolerable education for the young artisan? Sufficient acquaintance with arithmetic and geometry as to give the youth the facility of ready calculation and measurement, and enough plain English to make him spell, read, and write correctly. This much, at least, is expected by society at the hands of the humblest artisan on behalf of his child. This can be had free, or at a nominal cost. The parent that would refuse to afford his children this much should be compelled to do it. State or municipal power should step in when the parent fails to see it done, and then if it is found the parent is able to pay, it should have power to recover the expenditure. Compulsory education, by all means, where the parents are able, but unwilling, to school their children. . . . . .

The establishment of schools of art, on a more enlarged scale than hitherto,—workshops not confined alone to artists in marble and colour, but workshops and studios, where the building craftsmen may learn, not only the theory of their different trades, but the principles on which they are based,—this is what is wanted. The same necessity exists to show the carpenter, mason, and joiner models of the different articles he may be afterwards called upon to construct, as exists for teaching the sculptor and painter. If the latter are allowed to study from good models, they become better artists; and if the youth of the building trades, during their early apprenticeship, can be ushered into museums or studios, where they can see models of roofs, staircases, domes, columns, and their entablatures, worked to scale, their understandings will be enlarged, and their power of imitation will be more rapidly and easily developed, consequently they will become more enlightened and skilful workmen. But they themselves must work: merely looking about is of no use.

Whatever tends to give the workman a more intimate knowledge of his business, tends to make him a more independent and valuable member of society.

NEW CATHOLIC CHURCH, STANHOPE-STREET.

On last Sunday the foundation-stone of a new church in connection with the Training Schools in Stanhope-street was laid by the Lord Bishop of Cape Town. It will consist of nave, aisles, chancel, sacristy, with organ gallery at west end. The aisles will be divided from nave by six arches on each side, supported on polished red granite shafts, with carved and moulded caps and bases. The roof will be open, framed with curved ribs, and sheeted, stained, and varnished. The aisle roofs will be similar. The chancel roof will be formed in panels, and richly decorated. The east window will consist of five lights, with rich traceried head in Bath stone. The west window will be a richly traceried window with stained glass. The roof will be slated with green and blue slates in ornamental bands, surmounted by ridge cresting. The length of the building will be 93 ft.; nave 22 ft. wide; aisles 12 ft. wide; height of nave 40 ft. The exterior face of walls will be red brick, with Bath stone dressings. A tower will rise to a height of 119 ft. Mr. G. C. Ashlin is the architect, and Mr. J. M. Cormack, of Talbot-street, the contractor.

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* Extracted from an excellent article in the current number of the *Builder*.

GATE LODGE AND SCHOOLS, DALKEY.

Our illustration with this number represents a new Gate Lodge and School-house recently erected in connection with Dalkey Church. The building contains a large class-room or lecture-hall, and infant schools, together with apartments for the sexton. It is built in the most substantial manner of granite quarried on the site, and, as a specimen of wrought granite work is well worthy of a visit. The interior is fitted up in a superior manner. The lecture-hall has an open timber roof, stained and varnished. The entire cost (over £1,000) of the building was defrayed by the munificence of Charles Leslie, Esq., who has given it as a free gift to the trustees of the church. The gasfittings were supplied by Messrs. Curtis; the iron work by Maguire and Son; and the tiling by Sibthorpe and Son; the rest of the building was executed by day work under the superintendence of Mr. Edward H. Carson, F.R.I.A.I., architect and C.E., 25, Harcourt-street.

SCULPTURE.

Our attention has been called to several well-executed busts which have been turned out by a young aspirant in the sculptor's art in our city—Mr. William Millard, of Harcourt-street. On our visit to his studio we were particularly struck with one—that of the late Earl of Carlisle—as being the most faithful likeness of that deceased nobleman we had ever met, out of the many that have been given to the world. This youthful artist (he is only in his twentieth year) has executed a clever medallion likeness, in white marble, of the late Miss Anderson, daughter of Professor Anderson. It is to form a portion of her tomb in Mount Jerome Cemetery. Our talented comedian, Mr. J. L. Toole (at present performing at the "Royal") will also, we understand, form a subject on which our tyro's skill is about to be exercised. Photographs (cabinet size) have been taken of several of his works, by Messrs. Millard and Robinson, of Lower Sackville-street.

CORPORATE "DOINGS"?

A special meeting of the Corporation was summoned, by requisition to the Lord Mayor, for Tuesday at one o'clock "for the purpose of considering and *doing, or causing all necessary acts to be done,* upon or in relation to a report from the Carlisle Bridge Committee, with reference to their inteirview with the Port and Docks Board as to the rebuilding of Carlisle Bridge." The roll having been called at 1·45, and a sufficient number to form a "house" not being then in attendance to discuss this important subject, *nothing was done*, and an adjournment took place until Monday next. There were *seven* representatives of the Press present on the occasion!!

SPADE AND PICK.

To call a spade a spade, is not at all times convenient; at the present, perhaps, it may be anything but pleasant to those whose bounden duty it was to see that an instrument of such vital importance to an "army of the period," inconvenient though its name might be, was provided for our troops. Are we not open, in some degree, to those reproaches not unfrequently heaped upon us, for our seeming want of enterprise, our fearful distrust of rushing into any novelty? How often do we originate ideas for ourselves? do we not generally wait for other nations to arm themselves in the newest and most advantageous way? and then, when we are quite sure they have shot some considerable way ahead of us, do we not feel ourselves forced into an imitation?

In a small work recently published, giving some of the changes about to be introduced into the infantry drill, we find that "shelter trench exercise" is introduced as part of the new field exercise. But "shelter trenches" require the use of spades, or, to evade that unpleasant word, let us call them shovels, for their execution. As yet we have seen or heard little to lead us to suppose that such tools are to become part of the equipment of our troops. We are, therefore, now in this curious position—the new field exercise, into which spade drill has been introduced, is already in force in some of our garrisons, and yet not a spade is forthcoming. Can any one inform us if a contract has been entered into for the supply of these articles for the use of the troops? If so, in what quantities are they ordered? are they to be issued by the dozen to regiments, or by the score? or is each man to be taught to acquire the same familiarity in carrying his spade as he already has in walking away with his rifle and kit? These are questions, notwithstanding their gravity, which, in a private firm, would be settled in some form or another almost as quickly as this can be read, experience being allowed to point out any improvement when necessary.

The men of the Danish army have for some years been in the habit of carrying a spade with a short handle; many of the Prussian regiments now carry the same kind of tool. In France we hear that the "embanking tools" are, in a great measure, carried for the men in wagons appointed for the purpose. If we have a committee at work sifting this subject, where do they hold their sittings? when were they appointed? and when may we expect them to publish their report? These are questions which should be speedily answered, for in these days delays are dangerous. The nations who are properly armed and equipped do not wait for their adversaries to complete any arrangement of detail neglected in time of peace. A few days now suffice to finish a campaign; everything, therefore, must be ready at hand, no time will be allowed to repair omissions. Perhaps some part of the disaster which has recently fallen upon the French, may be attributed to the fact of an insufficient supply of tools for entrenching themselves. Experiments seem to warrant us in assuming, that least one third of the troops should be provided with spades and picks; though it would not become us lightly to put aside the dictum of Napoleon, that every man should carry an entrenching tool, still, perhaps, we are warranted in not giving too rigid an interpretation to this rule when we consider that if more than one third of the troops were employed at one time they would be so close together as to hinder rather than assist one another, except in the formation of heavy works, when relays of earth require to be thrown up; but then such a case as this does not enter into the subject under discussion. The Americans, whom we must allow to be good judges in such matters, considering the experience they acquired in the War of Secession, seem to have adopted a most handy little tool. It has a long handle; and though the tools with short handles employed by some of the foreigners may have their good points, these may be considered as more than counterbalanced by the rapidity of execution and the general adaptability of the spade with a long handle. They are carried by two companies of each regiments by turns. This appears to us a good method for carrying the tools; but if the arms and accoutrements of two regiments were altered in such a manner as to decrease their weight, we might then impose upon these companies the entire carriage, thus avoiding the confusion occasioned by the constant change of bearers. In conclusion, we will briefly call attention to the success which attended the competition occasioned by the offer of a reward by the Government for the best rifle fulfilling certain prescribed conditions. The amount of money expended was as nothing to the nation. Who doubts that it was well laid out? We say the country will never begrudge such sums, and we suggest that a prize should again be offered for competition for the best "entrenching "tools," *i.e.*, spade and pick, laying down the requisite conditions for amilitary weapon, such as lightness and strength combined with general adaptability for all soils, &c.—*Broad Arrow.*

CORRESPONDENCE.

[*It is to be distinctly understood that although we give place to letters of correspondents, we do not subscribe* editorially *to the opinions or statements set forth in same.*]

THE ROUND TOWERS OF IRELAND AND THE STONE OF DESTINY.

TO THE EDITOR OF THE IRISH BUILDER.

Sir,—The letter in the Irish Builder of 15th ult. established the eastern connection between the Irish and Scotch towers, and demonstrated the Celtic-Scoto identification existing in Erinn and Caledonia between the Phœnician Baalism for which the round towers originally were erected. The eastern associations of this country, the similarity of idiom, manners, and customs, all lead the impartial historian and antiquarian to the conclusion so quaintly, yet humorously, endorsed by "Father Prout," that "the Persians and the boys of Tipperary were first cousins after all." The advocates of the Petrie school have neither expended time nor investigation in unravelling the intricacies of Milesian history: they merely cursorily glance over the surface of ill-digested examination, and base an erroneous theory upon the crude digestion of contorted facts. I have endeavoured, during the last five years, to expose the fallacy of too implicit reliance on preconceived opinions, which cannot bear the test of investigation; and while in nowise injudiciously carping with veracious historical evidence, I have been compelled to dissent from many theories put forward by novices whose knowledge of either the history, manners, or customs of our country has been found woefully defective when analysed by the criterion of impartial investigation. But leaving all irrelevant remarks, I would beg to direct your readers' attention to another paramount argument. "Facts are stubborn things"; they present in plain, unvarnished terms the true key for adjudicating truth. Few persons are aware of the real origin and meaning of the "Stone of Destiny," and its associations with Tara. In order to elucidate this fully, and show its important connection with the Round Towers, I would direct your readers' attention to the following facts relative to Tara, evidencing the reflex eastern grandeur which culminated in Ireland, and was abolished by the glorious mission of St. Patrick, when at Tara he exponed the shamrock as an evidence of the triune God. Babylonish history narrates that Nebuchadnezzar had a temple dedicated to Baal; it was called by the name of "Tara," which in the Sanscrit language means "woman," doubtless referential to the synonymous veneration rendered to Astarte, the Pagan queen of heaven. At Sankarah the inscription on a sun temple was as follows:—"I, Nebuchadnezzar, erected this noble temple of Tara to the sun, my lord—I, Nebuchadnezzar, dwelling at Beth-Tara." In this temple the worship of Baal was carried on; the divinations, errors, and folly of the recreant kings of Judea were conducted. It forms a curious coincidence that the head quarters of this Baal worship should synchronise. Orders were issued by the fire priests to supply the sacred fire to the four provinces of Ireland from the great sun temple of Tara. This mandate was enforced so rigidly that the civil power compelled the Phœnician and Druidic inhabitants to compliance for supplying the fire from Tara; and four towers or sun temples were specially erected for this purpose in the four provinces of Ireland in the year A.D. 79. Now the Scriptures record that, in building Solomon's Temple, the oracle was in close connection with the holy place, and the two pillars, so conspicuous in the Scotch tower, are important and symbolic in their bearing. The pillars are stone parables of great acts. They foreshadow the

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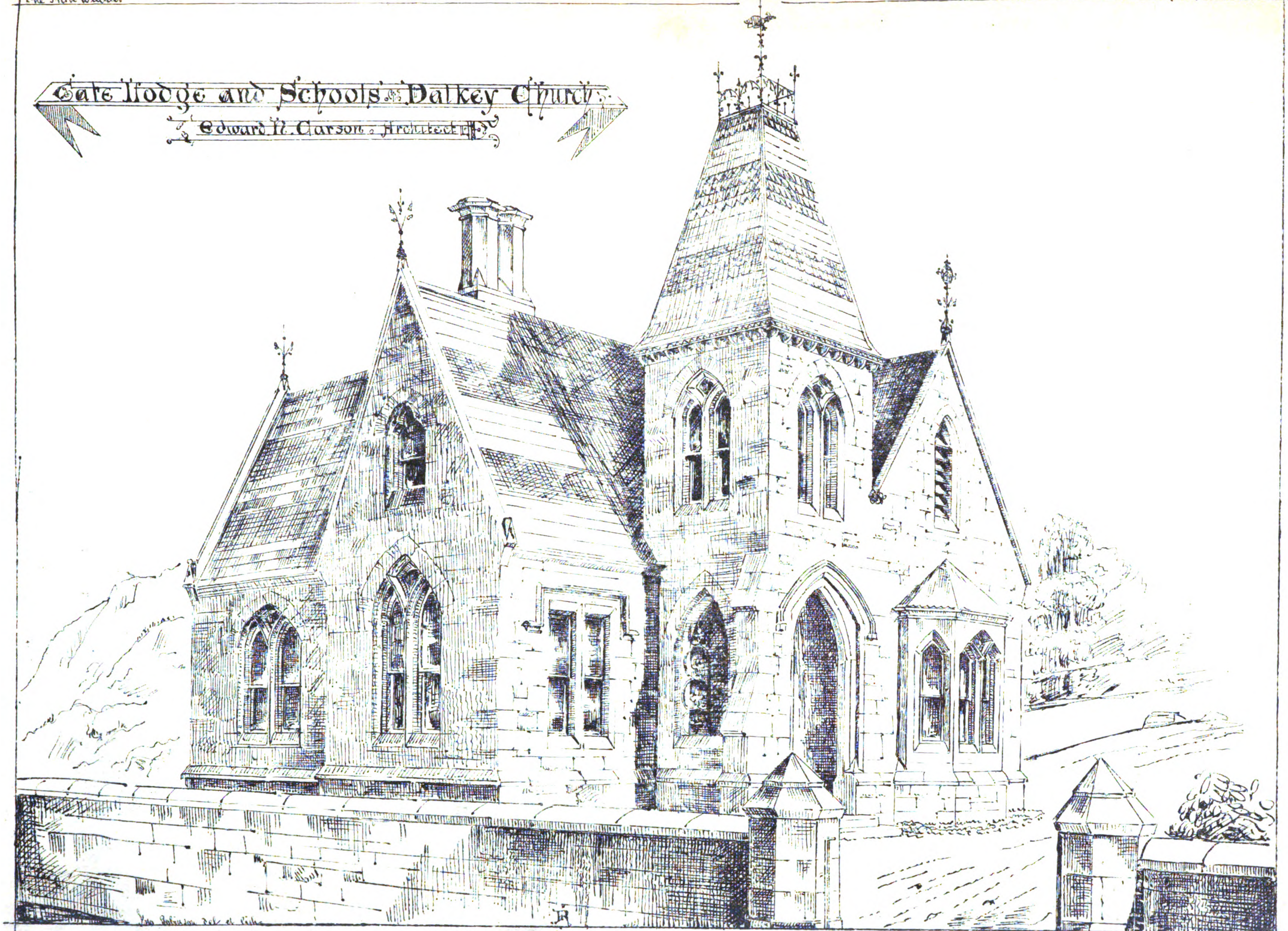

Gate Lodge and Schools at Dalkey Church

Edward H. Carson, Architect.

Jno Robinson del et lith
JR

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true and false sacrifice, the true and false prophet. Colonel Taylor, a gentleman who has written several valuable works on India, has referred to Tara in a late work, in which he states that there is a place in India called "Seth Tara," or the seven stars of Tara. The meaning of the word "Hindoo," O'Brien says, is the "moon worshippers." The Baalists had, as Scripture records, a "Queen of Heaven." They belonged to the Israelitish hosts, and apostatised from the great leader. The wise men and the star were proverbial of truth and knowledge. Now Tara in Ireland is associated with a regal power and dignity which invests Irish history with a grandeur recalling the ancient splendour of her kings and chiefs; and the ancient Olympian games —the horse-racing and festivities kept up in pristine times, and still forming so great pastime to the Celtic race,—all this shews the Eastern connection. That accomplished disciple of the late Dr. Todd, Prof. Hennessy, has shown how horse-racing formed the principal game at Tara in the second century; and Sir William Wilde states that at Tara the road of chariots led to the great palace of our kings. But—most important fact of all —at Tara a grand sun-temple existed, and here a stone, by which the destiny of the nation was determined, interpreted marvellous things for guidance of the superstitious sun-worshippers. This stone was used for crowning our Celtic kings, and, by the ravages of invasion, was transferred to Scotland, and from thence to Westminster Abbey. Queen Victoria was crowned on this stone; on it she received the triple honour of sovereign of the United Kingdom. It is strange that after centuries of vicissitudes, which few nations have experienced as Erinn has, that the queen of these realms should receive her royal installation and be invested with the sceptre of sovereignty on that stone where Ireland's ancient kings were honoured by thé praises and confidence of a nation's homage, and that the eastern connection should find, even in the British monarchy, so strong a confirmation of the supremacy of these fire-worshipping people, who exercised so powerful an influence at one time over this island, and whose round towers live to attest their skill in architecture, and the ancient eastern traditions and religious polity of the disciples of Baal. In my next I shall enter more minutely into the Phœnician associations on which I base the scriptural, historic, and traditional proofs of my great argument.

Caleb Palmer.

Ashbrook, Raheny, Aug. 29, 1870.

"Hail, Glendalough! dark ruin of the Wave,
A fallen city, and a People's Grave,[*]
Where many an arch in ruined sculpture lies,
And the round tower, o'er which the raven flies,
Rears its sharp head, the emblem of the proud,
Resists the gale, and bursts the hov'ring cloud;
Here, too, the venerable pile appears,
The time-worn churches, pride of other years,
Within whose pious, consecrated walls,
Numbers once heard devotion's hallow'd calls.

And, 'mid the churchyard's sad memorial stones,
Rises from out the mass of mouldered bones
The broken arch, 'neath which the Pilgrim spread
His dewy robe, and bent in pray'r his head.
Those days of sylvan pilgrimage are o'er,
The Pilgrim bends before his shrine no more,
And the stone cross, that graced the church's aisle,
But swells the mass of the neglected pile."

Elrington's Poem.

CARLISLE BRIDGE.

TO THE EDITOR OF THE IRISH BUILDER.

Sir,—The present "Bridge Committee" have had under their consideration two designs for a new bridge, the comparative merits of which have been discussed in your columns. One of these for an iron bridge in one span, by Messrs. Page and Turner; the other for a stone bridge in two spans, by Messrs. Lanyon, Lynn, and Lanyon. At a meeting of the Committee on Saturday last it appears that it was resolved to recommend to the Port and Docks Board for their adoption the two-span stone bridge, "*In Memoriam*," for the following reasons:—

1. Because they have been given an estimate for the work from a responsible contractor, who proposes to build the bridge for £40,000, whilst they have been led to believe that the cost of the one-span iron bridge would be £50,000, though I have seen an estimate for the work in the hands of Messrs. Page and Turner for £36,000, and they tell me it could, if necessary, be scamped down to a considerably lower sum than this.
2. Because they have been informed that the two-span stone bridge would afford peculiar facilities for providing the new sewerage arrangements.
3. Because stone is a more enduring material than iron.

As regards the first reason, I think it must be plain to any man of common judgment that whatever would be the cost of the two-span stone bridge, the cost of the one-span iron bridge would be thousands of pounds less, for iron is cheaper than stone for the superstructure, and there would be no pier to build in the middle of the river, with its great cost, and cofferdam, which would have to be made in the middle of the prèsent centre arch.

As to the second reason, I think it must be equally plain that a pier in the middle of the river can afford no facility for providing for the new sewerage arrangements, but would instead involve considerable cost, if not difficulty, which would be altogether avoided by a one-span bridge.

As to the third reason, there can be no doubt that good stone is more enduring than iron, but the comparative merits of the two materials for the purpose of bridges having been materially considered by engineers of high repute in England, they have decided to employ iron instead of stone for some of the most important bridges over the Thames, in London, and elsewhere, and as it would thus appear that the reasons of the committee for recommending a stone bridge of two spans, instead of an iron bridge in one span, are not sufficient, would it not appear only right towards the citizens (who will have to pay for it), that instead of now hurrying needlessly to a decision on so important a matter, they pause before committing themselves to either design, and arrange to have three points reconsidered?—

1. That *proper* means be taken to ascertain the *true comparative* cost of the two designs, submitting both to true measurements and equal prices.
2. That they *satisfy* themselves whether a pier in the middle of the river would afford facility or difficulty in providing for the new sewerage arrangements.
3. Whether there has been sufficient reason for adopting iron superstructures in some of the most important bridges in London; and whether there be not equal reason for adopting the same material for Carlisle Bridge.

A further question is suggested by the remembrance of Mr. Page's letter, from which it appeared that there would be a practical difficulty in properly constructing a stone bridge, with the necessity of building it in separate portions, or the alternative of providing at very considerable additional cost another bridge to carry the traffic during the erection of the new one.

As a citizen, I think it but fair to ask the attention of your readers to these several points, so that we may endeavour to secure the best bridge for our purpose, which will reflect credit on every one concerned in its erection.

H. F.

TO THE EDITOR OF THE IRISH BUILDER.

Sir,—It has been pleaded by many parties in favour of building a new bridge in place of extending and lowering the old one, that while building the foundations for the abutments and pier in the centre of the Liffey, provision can be made for laying and inspecting the tube or syphon which is to carry the sewage from one side of the river to the other. But I trust this ridiculous argument will not succeed in misleading our already overtaxed ratepayers, as it must be evident to any man of common sense that a tube for this purpose need not be wider than five or six feet, and that if two smaller tubes be used instead of one, as being less likely to be choked, similar to the way in which the Vartry water was carried over the old bridge, these syphons could be laid on the actual bed of the river, beneath the mud, with upright shafts for cleaning out or overflow opposite each of the old piers. For this purpose especially the model which I saw lately in the City Hall, exhibited by Mr. Geoghegan, is peculiarly adapted, the lateral extensions afford ample space for descending steps to the clêaning shaft, and for supporting the high lever sewer. This important question should be submitted to independent scientific inquiry before we are called upon to incur a wasteful expenditure of money; and if a public meeting of the citizens be called, it may be the means of dealing with the matter in a more satisfactory manner.

Burgess.

INSTITUTE OF ENGINEERS.

TO THE EDITOR OF THE IRISH BUILDER.

Sir,—I am much obliged for the information you were good enough to give in the last issue of the Irish Builder relative to the names, &c., of the *present* Institute of Civil Engineers of Ireland. I regret to find, however, that from that list the names of several men of eminence in the profession, some of whom are now practising in and about Dublin, are, it would seem, invidiously omitted. I will take it as a great favour conferred if you will, at your earliest convenience, insert in the Irish Builder the names, &c., of all those who formed the original or first institute, and who now appear to be rejected or ignored by the *junior* society sitting within the walls of Alma Mater (T.C.D.).—Yours,

A.I.C.E., England,
M.I.C.E., Ireland (original).

NOTES OF WORKS.

The foundation-stone of a new Methodist church was laid at Banbridge, County Down, on Wednesday last by William Arthur, Esq., M.P. It will be in the Gothic style. Sittings will be provided for about 400 persons. The material will be blue stone procured from quarries in the neighbourhòod, with dressings of freestone and granite. In rere of the church there will be a vestry, class-room, reading-room, with school-room over. The total cost will be £3,000, of which sum Mr. John Glass, of New York, contributed £2,000. Mr. Collen, of Portadown, is the contractor.

St. Mary's Church, Drogheda, has been re-opened after undergoing extensive alterations and improvements. The building has been painted throughout, and provided with new furniture and fittings. The roof has been newly slated, and the exterior walls pointed.

The new town-hall, Larne, has been opened. It is the gift of J. M'Garel, Esq., J.P., to the townspeople.

Lunatic Asylums in Ireland.—The nineteenth report on the district, criminal, and private lunatic asylums in Ireland has been published. The report states that in 1869 there were in public asylums, 6,816; in private, do., 689; in gaols, 5; in poorhouses, 2,967; in Lucan, supported by Government, 45; in Central Asylum for Criminal Lunatics, 170; total number of registered lunatics, 10,082. In 1860 there were in public asylums, 4,289; in private, do, 509; in gaols, 293; in poorhouses, 2,534; in Lucan, supported by Government, 86; in Central Asylum for Criminal Lunatics, 138; total number of registered lunatics, 7,844. Lunatics at large in 1869, 6,579. Lunatics at large in 1860, 8,991. Total number of insane in Ireland in 1869, 16,661; total in 1860, 16,885. The main feature of this table is that the floating population of insane at large—that is, persons not resident in any asylum, poorhouse, or other institution, but living with their relatives or friends—has been reduced in ten years to the extent of 2,412, by the absorption of 3.567 individuals into the various asylums provided for them, and by an absolute falling off of 174 in the total number of insane in Ireland.

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[*] It is stated that a city lies at the bottom of the Lake.

"ARCHITECTS AND BUILDERS."

Amongst the correspondence appearing in a recent number of the *Building News* is the following from a writer who signs himself "Fair Field and no Favour":—

"In last week's *Building News* you give a letter from an architect against builders or joiners making plans, &c. Will you allow something to be said on the other side by one who has passed from the bench to be shop-foreman, to out-door and managing foreman under a contractor, and has had an opportunity to learn some of the ins and outs of contracts?

Your correspondent says that architects do not want builders to give low tenders; that they do all they can to advise their clients not to accept the lowest. Well is this fair? May it not be asked what principle should be acted upon, or what can be the object of calling for tenders, unless it be to obtain the advantages of competition? Is it right to put builders to the trouble of getting up estimates at the same time that the architect or his client may have a particular man that he means shall have the job? Again, what chance is there for a man to rise from an inferior to a higher position except by tendering; is he to buy the favour of some architect in large practice? Again, is it not a fact that many builders, like architects, know comparatively nothing of the business, who, when they have to get up a tender, instead of being able to go through the plans and extract quantities, and price them, employ an architect to do it for them? I am aware there are many excellent gentlemen who are above this; I have met with several; but it is quite true that in this matter the right man can evade specifications and trick architect and client.

It is said that many of the builders are scamps, and are not to be trusted; but whose fault is it where an architect is employed? Any honest builder would prefer an architect between him and the client; but if an architect takes the money from his client ought he not fully to discharge his duties? Why do they call upon builders to give securities for carrying out contracts when they are only to receive a given percentage as the work proceeds, and that upon the certificates of the architect? It seems much more reasonable that the architect should give the security than that the other should do so. I have known in what is called a select competition, that only one man out of the number competing was able to give the security and he allowed to name the competitors. Of course he had the job. In reference to builders making their own plans, is it not true that there are many builders who get little jobs to do, and will go at once and employ an architect to give them plans and details for no other purpose but to get in his debt, when the architect knows he shall never get paid until he puts some job into their hands, when of course the client has to suffer to make up for this.

Again, are all architects up to the duties they undertake? Many of them understand the principles of proportion and arrangement on paper, as well as being able to draw up plans and specifications, and for these duties are probably well qualified, but they know very little of the practical part. They do not know whether a stone is on its natural bed, or when it is face-bedded; nor do they know the difference between Memel, Dantzic, or Swedish timber when sawn out into scantlings; the same by deals—Christiania, or Wyburg; or of the difference of the several kinds, which makes a great difference in the quality of work. One builder may buy his deals at £15 or £16 the 100; another may give £24; yet they all come under the term yellow timber. The consequences are that one builder, having done work under the architect, knows the way to work it; indeed, it has appeared to me many times that the architect was determined not to see when he goes to the job, so long as the details of elevation and ornamentation are something near the mark.

The tone of your correspondent's letter is very suggestive of despotic assumptions that will not be endorsed by any liberal-minded architect. Is it to be received in this nineteenth century that because a man started life as a joiner or in any other branch of the building trade, he is to be kept down, whatever his ability may be, in order that he may not intrude within the assumed domain of a privileged class?

I give an instance that occurred to me some short time since. A man applied to me to build a house for him, asking me to give plans and specifications as to what I was going to do for the estimated cost. I suggested that he should employ an architect, naming one. He said, at first, that he did not think it worth while, as he had confidence in me, but he would think about it. He consulted some of his friends. They recommended another architect, who got tenders for the job, allowing me to tender. My tender being a few pounds too high I lost the job. Of course, I do not know what passed between architect and client, but I was told afterwards that it was my own fault; if I had not made the suggestion he would not have thought of it, and would have been very well satisfied with my estimate. Yet, forsooth, because I happen to be able to do such a thing—acquired in the time which many spend in the pothouse—your amiable correspondent would not allow me to tender, but would prefer giving the advantage to those incapables whose chief ability is employed to trick architect and client."

THE BARROW DRAINAGE.*

The drainage of the River Barrow is a subject which has for many years occupied a considerable amount of attention. Scheme after scheme to secure the vast tracts of country on the banks of the river from an annual deluge, has been proposed, but proposed only to be abandoned as impracticable. About 36 years ago Sir John MacNeill proposed a plan for improving the river from Monasterevan to Athy; and in 1848 the Board of Public Works made surveys and sections of the river and its tributaries, but each of these projects was abandoned. In 1863 an attempt was made to procure complete surveys, but the amount of money required for this purpose could not be collected. In 1868, however, a large number of the owners of the flooded lands, having met in Dublin, formed a committee to procure estimates of the cost of the work. This committee approved of a plan laid before them by Mr. John Bower, C.E., and the work at last seemed in a fair way of being accomplished. The committee was fortunate in procuring the services of an engineer who has, we believe, executed works to the value of about half a million sterling. They had the surveys and experience of former projectors to profit by, and the majority of the proprietors seemed in favour of Mr. Bower's scheme. It, however, met with some opposition. The drainage district proposed to be formed by him consisted of about 50,000 acres, and the estimated cost of the work was about £195,000, or an assessment of £31 4s. 3d. per acre. Many of the proprietors shrank from undertaking so extensive a work, and preferred carrying out the drainage on a smaller scale. They opposed Mr. Bower's project, and contemplated making the improvements they thought necessary for their own advantage by the formation of small districts. It has been proposed to form a drainage district, comprising about 2,000 acres, at Kildare, and there is no doubt that if this proposal be carried out, several other small districts will also be formed. Mr. Bower has written a pamphlet, in opposition to this scheme. He points out that its effect would be to drain about 2,000 acres of land, and to deluge with floods about 7,000 acres. A comparatively small portion of property would be improved at Kildare at the expense of a large portion at Athy. The area of the rain basin of the proposed district is 14,000 acres, and if the scheme which Mr. Bower opposes were carried out, the rain there deposited would be carried off upon a district of about half the area, and would have no means of discharging itself proportionally therefrom. This district however, is not likely to be the only one injured if this independent course of action be permitted. "If," Mr. Bower says, "the design of improving the Rathangan and the Portarlington head streams, which mainly cause the destruction at Monasterevan, were sanctioned and executed, the injury to those flooded lands would be increased, and the enormous cost of the great shoal and other works in the main stream at Monasterevan would most unjustly fall upon the Marquis of Drogheda, Mr. Evans, and the other proprietors of the basin at and above Monasterevan. A similar result would follow from the execution of the works on 'the Tully' and 'Cherry Mills' tributaries, as described in evidence at the Kildare meeting; and if both the upper and lower tributary districts mentioned were sanctioned, and the works executed, then the flood basin above Bert would be ruinously inundated, and the very great cost of providing outfall for the combined waters sent down upon those 7,000 acres would fall upon the proprietors of those lower districts." It may, however, be urged that Mr. Bower's plan would entail an equal amount of injustice. Why should A, who derives a comparatively small advantage from the improvements, be made to contribute an amount towards the expenses of the works, equal to that contributed by B, who resides some ten miles away, and to whom the works are highly advantageous? This objection can, however, be removed by dividing the districts into large sections, and by assessing each section, according to the benefit it derived—not according to the benefit it would derive if permitted to drain itself, regardless of the injury inflicted upon the section lower down on the river, but the benefit it derived by works carried out with a due regard to the security of other sections.

THE DEFENCES OF PARIS.

There is probably no subject connected with the war which is more interesting than the power possessed by Paris of standing a siege.

Paris is situated, to use a military term, *à cheval* on the Seine, near the junction of this river with the Marne, the latter river covering the city on the east, while a bend of the former protects the western side. The fortifications consist, first, of a chain of detached forts or fortresses commanding the rivers, and, secondly, by an *enceinte continué* running right round the city. The bastion system of Vauban is adopted throughout.

The exterior line of defence commences at St. Denis on the north, and extends to the Marne at Nogent, a distance of about eight miles. It consists of nine fortresses, and opposes the direct advance of troops from Germany. On the south Paris is covered by a line of six forts, reaching from the Marne to the Seine, a distance of about seven miles. These complete the defence of the south; four are pentagonal and two quadrilateral. They are built of substantial materials, and contain bomb-proof barracks, and have casemated curtains. The third exterior line of defence is eight miles long. It does not consist of a chain of forts, but of the great citadel, Mont Valérien, which serves as a *tête-du-pont* to the bend of the Seine, which covers Paris to the east. Mont Valérien is supported on one side by Fort d'Issy, and on the other by St. Denis. It is the most important work of the whole. The front toward the river is 460 yards long, and the other four faces average 328 yards each. There is bomb-proof accommodation for stores and 4,500 men. The ring of detached forts extends over 22½ miles.

Within this is seen the *enceinte continue*, or continuous line of fortifications. This consists of no fewer than ninety-four bastions. The exterior sides average 328 yards per bastion, forming an *enceinte* of 30,840 yards, or nearly 17 miles, probably the largest work of the kind ever executed. The cost was enormous—to judge from Marshal Marmont's opinion, was well spent. Marmont considered the fortifications of Paris "an event the most useful and important in the defence of France." The escarp of the *enceinte* is 33 ft. high, the ditch being 82 ft. wide. The distance from the boulevard to the *enceinte continue* averages about 1,093 yards, and that from the *enceinte* to the forts is about the same. So long as the forts are unconquered it will be impossible to bombard Paris from a less distance than about 7,000 yards, and even then the siege train will be under fire at a range rather too close to be pleasant.

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* From the *Leinster Express.*

In addition to these defences it is stated that earthworks are being raised from fort to fort, but we learn from private letters that these are of a very insignificant description, affording good cover, it is true, for riflemen, but not safe against even 6-pounder guns. It is stated that more than 1,000 guns cán be placed in position; but this estimate, no doubt, includes a very large number of weapons which, however effective at close quarters, will be practically useless at long ranges.—*Engineer.*

A LUNATIC ASYLUM FOR KILDARE.

At the meeting of the Naas Board of Guardians on Wednesday last, Mr. M'Donald asked why it was that dangerous lunatics were retained in the workhouse, instead of being sent to the Carlow Lunatic Asylum?

Chairman—For the very good reason that there is no accommodation for them in that institution, as you may have observed on reading the report of the committee, who describe it as being utterly inadequate for the demands made upon it. The building, which was originally intended to hold but 100 patients, has now within its precincts 196 poor creatures of unsound mind, and I think it a matter of the greatest importance that such facts should be laid before the public, so that they may see the great necessity of having a separate asylum built for this county.

The Baron de Robeck observed that the report of the committee, alluded to by Major Borrowes, described the patients lying in beds packed together side by side, so close that one would scarcely have room to pass up between them, whilst others were sleeping in sheds provided to accommodate the surplus number taken into that institution, which, to his mind, was a most melancholy state of things. He likewise urged the necessity of having a separate and distinct asylum built for the County Kildare.

The other members of the board concurred in the observations made by the chairman and the Baron de Robeck.

THE CELTIC LANGUAGES.[*]

The study of Celtic languages has made great progress since the days of the M'Pherson controversy, and the rash statements then made by both sides would not be ventured at the present day; yet outside philological circles vague notions are in vogue about the relations and literature of these languages. It may not, therefore, be useless to mention that the languages of which the *Revue Celtique* treats are divided into two widely separated classes, the Gaelic and the Cymric. Each of these has its dialects, but in the Gaelic group the local differences do not entitle any of the varieties to the rank of a separate language; and "Do you speak Gaelic?" is an inquiry which conveys the same meaning whether you address an Irishman, a Manxman, or a Highlander. In the Cymric group, on the contrary, there are three well-defined languages—Welsh, Cornish, Armoric. The two which survive have also their own subdivisions; the Welsh of North Wales differs from that of Pembroke; and in Brittany, as we are informed in the *Revue* by M. de Jubainville, there are four dialects, the centres of which are Leon, Vannes, Cornouailles and Treguier. Besides these living languages, and Cornish, which is but lately dead, some Celtic scholars occupy themselves on the relics of the ancient languages of Gaul, of South Britain and of Cumberland; while others devote themselves to the mythology, the early Christianity and the art of the Celtic nations.

The *Revue* contains two articles on Irish illuminations, but neither has much interest; perhaps the article which has most is Mr. Hennessy's on the ancient Irish goddess of war. She was called the Morrigan, and potent was her influence. Sometimes she would hover over a favorite warrior, and he would carry all before him, at other times she would fly towards him and prevent him from rushing against overwhelming odds. Mr. Hennessy proves that she was considered to have the form of the greybacked crow. This bird, which in some parts of England is not seen at all, and in others is a migrant, occurs all the year round throughout a great part of Ireland, and is called *Fionóg* by the natives. It is usually a solitary bird, but at times numbers are seen together. This apparent meeting for conversation, its remarkable plumage, its deep croak, and the sudden way in which it sometimes surprises a rambler on the mountains who thinks himself alone, all mark the fionóg as a fit object of pagan superstition and fairy legend. Mr. Hennessy's article gives many instances of its achievements.

M. Gaidoz, in a chronicle of matters relating to the objects of the *Revue*, makes some remarks on the present condition of the Irish language. The rapid decay of Irish as a spoken language has, we believe, been chiefly owing to the national schools, which, by making English the sole medium of instruction, have put a stop to all education through the Irish tongue, and have discouraged the reading of Irish books. In the time of the Commonwealth, as a proclamation, dated May 18, 1655, shows, there were people living in Dublin who knew only Irish. In the adjacent county of Meath little else was spoken at the end of the last century, while now those who cannot speak English are only to be found in the wilds of the south, west, and northwest. In Ulster, Connaught and Munster, Irish is still much spoken; but in Leinster it is almost extinct. In the King's County, the last aged people who said their prayers in the old language died many years ago, and even in the mountains of Wicklow those who speak it are few. In Kilkenny, Meath and Louth it may yet be heard. In every county of Ulster, except perhaps Armagh, and in all parts of Connaught, Irish is still spoken. We have given this summary of the present condition of the Irish language, because travellers who keep the main roads form quite mistaken ideas on the subject. In Scotland, Gaelic is still strong. The dialect of the Isle of man, which will probably hardly survive the next generation, will be preserved in a Bible, Book of Common Prayer and a few printed prayers and verses. To the eye of an Irishman, printed Manx has exactly the aspearance which the ludicrous phonetic spelling of Artemes Ward has to an English reader.

The extinction of the Celtic languages, which we believe is a good deal further off than is generally supposed, will by no means put an end to Celtic studies. A considerable literature will remain. Of Cornish, only two or three plays are extant, but Wales and Brittany have produced a good deal since the invention of printing, in addition to their MS., stores. It is in the Gaelic language, however, and mostly in Ireland, that the main riches of Celtic literature are accumulated. Law, history, poetry and romance are preserved in abundance on closely-covered vellum. There too the artistic remains of Gaelic civilization, so curious because so distinct, may be studied in all their amazing variety and richness in the wonderfully-illuminated Book of Kells and in the splendid series of brooches, weapons and reliquaries, preserved in the museum of the Royal Irish Academy. Several monuments of Gaelic literature are now printed with translations, and are easily accessible to the general reader. If we were to indicate a course of reading, we should name the 'Senchus Mor,' 'The Wars of the Irish with the Foreigners,' and the romance called 'The Pursuit of Diarmuid and Grainne' as good works to begin with. The reader will perhaps find their style unpleasing: this must be the case with any entirely foreign set of ideas; but if he perseveres he will attain enjoyment; and when he lays the last volume down he will feel that he has taken a peep into a fresh country, and that he need not waste time in perusing a recent work in which a writer, knowing neither Gaelic nor Cymric, daintily extracts what, following his own idea, we may call sugar of light from the wild field of Celtic literature.

If M. Gaidoz avoids pedantry, and bears in mind that erudition is compatible with general interest, the *Revue Celtique* will be of interest to scholars and to general readers, and will be of service in spreading accurate ideas on a little-known subject, and in opening to the public treasures of imagination and lines of bygone thought which have been too long neglected.

ARDFERT CATHEDRAL.

Mr. Arthur Hill, A.R.I.B.A., of Cork, has announced his intention of shortly issuing lithographic drawings and photographs, with descriptive letterpress, illustrating the architecture and present condition of Ardfert Cathedral, County Kerry. We think Mr. Hill deserves the thanks of architects and archæologists for having undertaken such a task. It is to hoped that he will be favored with a sufficient number of subscribers to the work to repay him for his trouble, and afterwards induce him to take up some other samples of our "Ancient Irish Architecture." In our advertising columns will be found further particulars respecting Mr. Hill's forthcoming work.

NEW PATENTS.

C. H. Perman. Birmingham, "*Hinges.*"—The inventor furnishes the knuckles of hinges more cheaply and accurately by means of circular cutters or cutting wheels with teeth on their peripheries. He clamps the hinges in holders, and he causes the holders with the hinges in them to move forward past the circular cutters, or the cutters may move past the holders The cutters are caused to revolve continuously. Each. cutting wheel has a semicircular or other portion of a circular groove around its periphery, corresponding in size with the knuckle to be produced, and teeth are cut in this groove. The hinges come in succession or otherwise to the first cutting wheel which removes all superfluous metal on one side of the knuckle, and then the second cutting wheel operates similarly on the opposite side of the knuckle.

R. Conci, Paris, "*Iron scaffolding.*"—This improved scaffolding is constructed with an iron platform mounted on four wheels running on axles which are adjustable, so that the platform may rest on these wheels or may be lowered upon the ground. When mounted on the wheels it may be transported with great facility from place to place, and when arrived at its destination it is lowered and secured upon the ground, and forms a firm bed or foundation-plate for the scaffolding. The two axles revolve in four bearings upon the platform, and have motion imparted to them by toothed wheels, one of which is fixed upon each axle, and geared in connection with an endless screw. Two supports upon the framing of the apparatus are furnished with a bearing for the shaft of the endless screw, and the wheel for imparting the circular motion of the axle for raising and lowering the carrying wheels.

The engineering works of Messrs. Siemens and Halske, and the ironfoundry of Borsig, are now almost exclusively occupied with the manufactory of torpedoes. It is said that great improvements have been made in these war engines; the point chiefly kept in view being to make them movable from the shore by means of an electro-magnetical rotary apparatus.

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[*] From the *Athenæum.*

ACCIDENTS.

On Saturday, 20th ult., a scaffold upon which John M'Corry, bricklayer, and an assistant had been working at Clondalkin suddenly gave way, and both fell to the ground, a distance of about twenty feet. On removal to Steeven's Hospital it was ascertained that they had received very severe injuries. Mr. M'Corry is the author of a small work, entitled "Lays of a Toiling Minstrel," published a year or two since. In these times of "collections for sick and wounded in war," it is to be hoped that the claims for sympathy and aid presented by the family of this sober and industrious man may be considered. It is feared he will be totally incapacitated, and unable to follow his trade.

On Sunday (says the *Scotsman*) considerable excitement prevailed in the neighbourhood of Motherwell, owing to a fatal accident which occurred shortly after twelve o'clock noon. For some time past a number of workmen have been engaged at Orbeiston Bridge, on the Belshill and Roman Bridge-road, crossing the Clydesdale branch of the Caledonian Railway near the Orbeiston Collieries, in making preparations for removing the bridge, which was considered in an unsafe condition. Between forty and fifty men had been working on Saturday night in order to have it pulled down and the line cleared for traffic. A large number of holes were bored in the bridge, and powder was inserted for the purpose of blowing it up. The bridge is fully 100 feet long and 30 high, with three 36-feet arches of free redstone. The shots were fired, and the bridge was shaken from top to bottom, when it was intended to finish the work of demolition with a battering-ram; but scarcely had the men commenced operations before the the whole mass unexpectedly fell down with a fearful crash, carrying with it a number of the unfortunate men who were on the top of the bridge at the time. Those who escaped were at once set to work to remove the debris, and in a short time they succeeded in extricating their comrades, one of whom was dead; three were in a most precarious state, and Mr. A. Macdonald, the foreman of the work, was slightly injured on the leg and ankles. Nothing is known as to the cause of accident at present, but it is supposed that a keystone had been removed through the effects of the blast. Large numbers of people from the villages in the neighbourhood visited the scene of the accident during the day.

MISCELLANEOUS.

EXCURSION.—On Saturday last the workmen employed in Messrs. Ritchie and Jackson's extensive Scrabo and Alton sandstone, and Dufferin granite, quarries and depôt, Belfast, had an excursion to Newcastle. A special train having been engaged for an early hour, the excursionists, to the number of nearly 500, assembled at the Scrabo siding, and from thence marched in procession to the Newtownards railway station, accompanied by the splendid local brass band, and carrying flags and banners bearing suitable and tasteful mottoes. Arrived at Newcastle, the workmen, whose respectable appearance and orderly behaviour elicited the admiration of the townspeople, proceeded to the lovely demesne of Lady Annesley, kindly thrown open by her ladyship on the occasion. Here refreshments were partaken of, after which, and up till the hour of departure, various sorts of games, rings, dancing, and songs were indulged in, enlivened at intervals with select pieces of music from the band. All enjoyed themselves thoroughly, everyone doing their utmost to promote hilarity and comfort. The hour for leaving having arrived, the workmen reformed in procession and wended their way to the train, passing by the castle, where hearty cheers were given for Lady Annesley. All left Newcastle at the appointed time, and safely arrived in Newtownards without anything occurring to mar the pleasures of the day. From the railway station to the Scrabo siding the same order was observed as in the morning; and as the procession passed through the streets, its sober and decorous aspect was made the subject of favourable comment. Before separating, speeches were made by many of the workmen expressive of the good their employers are doing in the districts in which their quarries are situated, of the large quantity and excellent quality of the stone now being produced, and concluding with the hope that the unanimity and hearty co-operation existing between Messrs. Ritchie and Jackson and themselves, as employers and employed, might long continue. Cheers for Dr. Ritchie and William R. Jackson, Esq., and expressions of gratitude to Mr. Vance, the manager of the sandstone quarries, for his kindness and attention, terminated the proceedings of a most harmonious and well-spent day.—*Communicated.*

IRON SHIP BUILDING IN BELFAST.—LAUNCH OF THE OCEANIC.—On Saturday, at a quarter to 11 o'clock, shortly before high water, the screw steam ship Oceanic, built by Messrs. Harland and Wolff, was launched from the ship building yard, Queen's Island. This ship, which is one of the largest afloat, has been built for the Oceanic Steam Navigation Company, Liverpool. At the time the launch was to take place, a considerable number of spectators had assembled on the Queen's Island, Queen's-quay, Abercorn Basin, Donegall-quay, and on board the vessels in the harbour, where a view of the interesting sight could be obtained; but the novelty of a launch in Belfast has apparently died away of late, owing to the frequency of the occurrence. Some 10 or 12 years ago a launch would have been made the occasion of a gala day, and thousands of people would have crowded to the quays even to witness the floating of a small wooden vessel; but on Saturday, although a steamship of 4,000 tons register was to be berthed, not one-tenth of the number attended who would have been present in former years to see the launch of a vessel one-fifth the size. Two or three hundred people, including the workmen who had been employed in the construction, assembled on board and cheered enthusiastically as the noble vessel glided off the stocks. The daggers were struck by word of command, and the Oceanic moved successfully down the "ways" and into the water. The ship is 432 feet in length, and the breadth of beam is 41 feet. She is 4,000 tons gross register, but has not yet been measured by the Customs authorities.—*Northern Whig.*

THE WORKS AT QUEENSTOWN HARBOUR.—The outer defences of Camden and Carlisle Forts which command the entrance to the magnificent harbour of Queenstown are being pushed forward rapidly. Several Companies of the 43rd Regiment have arrived, and are encamped on the heights. They are daily employed in sinking the new trenches, and carrying out other works, some of which are upon a stupendous scale. Each fort is now virtually cut off from the mainland by a wide ditch fully forty feet deep. Besides this, means are provided for working under cover large batteries of heavy guns that, completely hidden from view, can, whenever required, open a destructive fire upon approaching vessels, and annihilate a hostile fleet before it could pass through the channel between the two lines of fortification. The convict labour is being turned to account upon the new Government Dockyard works at Haulbowline which are, however, but slowly progressing.

A road steamer has been set to work in the extreme north of Scotland. After this who will venture to say that the north is far behind? Even as far remote as Thurso in Caithness, a place generally supposed to be almost beyond the pale of civilization, one of those steam horses has been put into harness by a pavement manufacturer, and is now employed in conveying paving stones in their rough state from the quarries to the manufacturing yard. It is alleged that this iron animal will draw as much as 50 tons in a trip, or, in other words, do the work of twenty-five horses. Truly the Shetland ponies will become a drug in the market. But what are the unhappy toll-keepers to do? In the Caithness Road Act there is no clause under which toll can be levied; and the consternation thereby felt by the turnpike authorities may be imagined.

Mr. George Fawcus, of North Shields, has contrived an equilateral triangular drawing-board for isometrical drawing. An ordinary T square applied on the edges of an equilateral triangle draws tangents that meet each other at angles of 120 deg., and other lines drawn parallel to these radiating ones form with them angles of 60 deg., and 120 deg., which are the exact angles of the apparent squares of isometrical cubes. The inventor believes that the use of this new drawing-board will make the teaching of isometrical drawing both simple and easy. The practice of isometrical drawing is strongly urged in the science and art drawing classes.

The City of Dublin Steam Packet Company has added another vessel to its already large fleet in the paddle steamer Longford, built by Messrs. Laird Brothers, of Birkenhead. The Longford is 250ft. long by 27ft. beam, and 16ft. deep. She is fitted with engines of 300-horse power, having inclined oscillating cylinders before and abaft the shaft, and two boilers placed abaft the engines. On her trial trip the Longford attained a mean speed of 14¾ knots per hour, the engines making 27 to 28 revolutions per minute, with a pressure of steam of 25 lb. per square inch.

We learn from the *Scientific Journal* an American paper, that a clergyman—the Rev. H. Highton—has invented a new kind of artificial stone, denominated the Victoria stone. The process by which it is made consists in mixing broken granite with hydraulic cement, and steeping the whole, when set, in a solution of silica. The granite used is the refuse of the quarries, and is broken up at the works. It is then mixed with Portland cement, in proportions of four of granite to one of cement, sufficient water being added to give it a pasty consistency. In this state it is placed in moulds, when it consolidates in about four days. When taken from the moulds it is placed for two days in a solution of silicate of soda, which completes the process.

Mr. Georges, in Montevideo, says the *Scientific American*, preserves meat by immersing it in a liquid composed of 85 per cent. water, and a mixture of glycerine with acid sulphite of soda and hydrochloric acid, and afterwards strewing dry sulphite of soda upon it, and sealing hermetically in cans. After the lapse of a year the flesh was perfectly fresh. Before using, it must be rinsed with dilute vinegar, and left exposed for a short time in the air. Meat thus prepared costs, in Paris, five cents a pound, and is said to be a valuale article of food. Meat can also be kept perfectly sweet by being immersed in melted paraffin, and when required for use only needs to be greatly heated to melt off the covering of paraffin, which can be saved for further use.

ROYAL DUBLIN SOCIETY.—Attendance of the public at the several departments of the society for the week ending the 27th day of August, 1870. Library—Readers—ladies, 20; gentlemen, 182. School of Art closed for vacation. Museum of Natural History (day-time), 228; evening, 1,711. Botanic Garden (Sunday), 5,550; week-days, 1,125.

A new mineral, named Nadorite, discovered in the province of Constantine, Algeria, has been analysed by M. Pisani. Its chief constituents are the oxides of lead and antimony. It also yields a small quantity of chlorine; and this is the chief point of the discovery; for no natural compound was before known in which chlorine was found in the presence of antimony.

TO HOUSE BUYERS.—The *Builder* says:—"Some benevolent individual is advertising at his own cost as follows:—

> 'BUILT TO SELL.—Inspect new buildings in carcase unplastered. Beware of heavy ground rents, repairs, and old materials.'

The advice is good, and should be taken."

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The Irish Builder.

Vol. XII.—No. 258.

HISTORIC STUDIES,

ARCHITECTURAL, SOCIAL, AND SANITARY.

TECHNICAL education is the cry of the hour, but why, as a preliminary to it, are not Practical Mechanics' Institutes established? Nearly twenty years ago we wrote in favour of them, and helped to found one in one of our island capitals. This institute proposed to do what all institutes that desired to give technical instruction or education to its craftsman class should do—to teach our young apprentices the principles of their several future trades. Classes were formed for the teaching of architectural, mechanical, and hand drawing, and lectures were given at least once a week by some well-known practical-minded public lecturer, on such subjects as bore upon the acquirement, practice, and development of skilled labour. Amongst the range of topics the following and others found a place, and they are exactly suitable at the present hour:—"Architecture," "The Organization of Labour," "Capital and Labour," "Currency, Banking," "On the Formation of Small Partnerships," "The Rise of Industrial Nations," "The History of Commerce," "A self-supporting Poor Law System, or the Utilization of Pauper Labour in Reformatories and Workhouses," "Industrial Schools: Hints on their Formation and Working," "The Education of the Eye" (as applied to artistic and mechanical employments), "On the Use of Mechanical tools and Instruments," "The Empire of Euclid" (in art and manufacture), and a variety of other germane subjects. Ladies and gentlemen made our institute presents of books and models, as we are sure several would do also at the present time; and as an enticement to the literary ambition of our members, the projectors established a manuscript magazine, to which all the members were at liberty to contribute. The magazine was made up monthly, and was lent by ballot to the member who desired the privilege of reading it at home. Many of the articles which appeared were afterwards published in some of our pretentious public periodicals.

But, to summarise: This first attempt at founding a Practical Mechanics' Institute failed for lack of funds and from the cold water thrown upon the effort by the members of the more ancient and present *un*practical institutes. Yes, hear it you young men of Great Britain and Ireland how the "rash enthusiasts" who possessed a little brain and clubbed together for the love of their order were assailed, and why? simply because they wished to lift their toiling kinsmen out of the immemorial rut of apathy and ignorance, by technically educating them in the principles of their professions.

Though Joshua, of the prophets, commanded the sun to stand still, and Galileo went to prison for saying it moved, those asterisks of heaven that twinkle through the night tell us so, and bid us move onward.

Verily, as long as our artizans and artificers work by "the rule of thumb," and think by proxy they cannot advance, nor will they be able even to hold their own.

Apropos, the objects of a *Practical* Mechanics' Institute could be forwarded by a variety of ways; at special meetings of the members, for instance, the subjects of a previous evening's lecture would furnish matter for a conversazione among the members *pro* and *con*. Such discussions would put each person upon his mettle, and, if he had really anything in him, it would bring it out; it would also have the effect of making those of the members having a forte for lecturing to his fellow, more scrupulous and painstaking in his preparatory studies, because he would feel that his views and arguments or data would be seriously questioned by others who desired to learn facts and to deal with them.

Our present mechanics' institutes have out-grown their name; they are little more than reading rooms, literary lounges, and lecture halls, where men are more often amused than instructed. "'Tis a pity, 'tis true," &c.

The several trades formerly in the Irish capital walked in procession annually, and also trienially. Each trade had its guild, corporation, and patron saint. It was the custom with several of these minor corporations to invite the viceroy or chief governer to a play or plays at Christmas time, at St. George's Chapel, on the anniversaries of their patron saints. St. George's Chapel stood in that part of Dublin near the Castle, known now as South Great George's street. We learn from an old MS., preserved by one Robert Ware, that in the year 1528, the Earl of Kildare (Thomas Fitzgerald), then Lord Lieutenant of Ireland, was invited to a new play every day in Christmas. The Mayor of Dublin in that year was Arland Usher, and his two bailiffs, Francis Herbert and John Squire. The tailors acted in the play the part of Adam and Eve; the shoemakers represented the story of Crispin, as Crispianus; the part of Bacchus and his story was properly filled in the persons of the vintners; the carpenters represented Joseph and Mary; the smiths played the part attributed to Vulcan, and all else appertaining; and the bakers represented a comedy, in which Ceres, the goddess of corn, played the principal part. The various other trades had their representatives. This play of 1528 took place on a stage erected on Hoggin-green, about the site of the present College-green. These Christmas plays were of a semi-religious character.

Another MS., in the library of Trinity College, Dublin, supplies us with a record of pageants and processions of a similar kind. We also find by entries in the Chain Book of Dublin, further details in which the guild and trade bodies of the city played a conspicuous part. From these entries we find that the Corporation usually supplied performers, and paid the expenses incurred in procuring dresses, scenery, and machinery.

At one of these representations on Corpus Christi time, the trades whose names are given are represented to have acted as we shall describe.

The glovers represented Adam and Eve, with an angel bearing a sword before them; the smiths represented Pharaoh with his host; the curriers (corrisees) were to represent Cain and Abel, with an altar and their offering; the weavers performed the part of Abraham and Isaac with their offering and altar; the goldsmiths were to find the King of Cullen; the mariners and vintners personated Noah and the persons in the ark dressed in the habits of carpenters and salmon takers; the skinners supplied a camel and the children of Israel; the hoopers (*i.e.*, coopers) were to find the shepherds with an angel singing "Gloria in Excelsis Deo;" the tailors found Pilate with his fellow kings, and his wife clothed accordingly; the Corpus Christi guild represented the part of Christ in his passion, with the Marys and angels; the barbers did the part of Annas and Caiaphas; the fishers (fishmongers) played the part of the Apostles; the merchants that of the prophets, and the butchers the tormentors.

In the yearly processions which were held in Dublin, called "Riding the Franchises," symbolical representations of the above different characters, or at least the patron saints with other accessories belonging to the history of the guild, were represented on the banners of each trade. The liberties of Dublin were then marched through and around, and bands of music accompanied the processions.

On the van or waggon that headed each trade, men sometimes were to be seen making or manufacturing some article belonging to their art. Thus, it was not unusual to see a weaver at his loom, or a printer working at a hand press from which circulars or songs were worked off and flung to the admiring crowd.

Though "Riding the Franchises" was abolished by a lord mayor's proclamation in 1772, the custom described above existed in one form or another down to our own time.

Any of our readers who desire further information about these curious customs relative to trade bodies in Ireland, will find further details about them in "An Historical Essay on the Irish Stage," written at the close of the last century, by Joseph C. Walker; or in the "Transactions" of the Royal Irish Academy.

The history of trade guilds and minor corporations is a subject deserving of study. Many kings and many English and Irish parliaments had to do with the matter from age to age, and the rights, privileges, and immunities claimed, even in our own time, by trade bodies, were the growth of many centuries, some of them dating from the feudal days, and finally assuming shape and form in the Communes and Boroughs of the Middle Ages.

Rome in the past, as in the present, is a paradox almost to mankind. Great in art and literature; great in vice and virtue. Whether the Romans conquered or corrupted, there was something both overwhelming and convincive in the means they employed. Even morality in Imperial Rome became attractive, and was a feature deemed fit for imitation. Rome had ever the ambition to rule the world, and the Romans aimed to eclipse every other people in whatever they undertook. In art, where Rome failed to create for herself, she absorbed the finest conceptions of others. Egypt, Assyria, and Greece were laid under tribute, and the art-spoil she amassed she developed into a type consistent with her own theory—magnitude and magnificence. The Romans were not content with simple chasteness in design; their public buildings and temples were a perfect incrustation of ornament—ornament overloaded: sculpture run to seed. Let one view the shattered fabric of the Coliseum, and scrutinize the extent and accommodation of the imperial baths, with their multiform surroundings of museums, galleries, porticoes, and their lavish decorations. "*Lavacra in modum provinciarum extincta,*" said Ammianus Marcellinus, when speaking of the Antoninian baths erected by Caracalla. Truly they covered provinces, and the ones we are now alluding to contained private baths capable of accommodating 23,000 persons. The Antoninian baths, however, were not the largest; those of Diocletian far eclipsed them in size, if not in magnificence.

We have always advocated, here and elsewhere, water, that there might be cleanliness; and light and air, that there might be health, for both poor and rich. To advocate a main drainage once through this large city was to run the chance of being charged with a touch of monomania on health, or a symptom of insanity. In some things, London and Dublin have imitated and improved upon Roman examples. We are proud of it, and we are not ashamed to confess that we have learned from the people of other nations lessons which, under certain modifications, we have turned to advantage in the god-like act of preserving human life. Our people drink purer water to-day than they did some few years since, and in many spots they breathe a purer atmosphere. To the professors of architecture and the building art the empire of Great Britain is much indebted. Why should we not be interested in the promulgation of sanitary laws, no matter who may have first suggested or framed them? The ancient Romans did not pollute the Tiber, and we have learned at last to purify the Liffey and Thames. The remains of the Cloaca Maxima, even though only one broken arch and a sewer remain, attest the desire that was felt by her people, that Rome should not only be a splendid city, but a habitable one.

We have built canals, railways, reservoirs, docks, harbours, bridges, aqueducts and viaducts, mostly for money-making, not life-preserving, desires. We have constructed, to convey from sphere to sphere, a commercial spirit, but we have been laggards in conveying from home to home the purifying health and life-giving element so bountifully showered upon earth. Let health reign above all things,—it is the primary consideration. Where sanitary science is neglected, education and religion must have only a feverish existence. Disease is the certain offspring of uncleanliness and dirt. No people nor no nation can progress or attain prosperity or a permanent position in the world's history that are oblivious to the public health. A people decimated by sickness and disease cannot be said to be properly governed, and if they vegetate not in a state of semi-barbarism they are certain at least to be at the fag end of civilization.

THE GREAT PITCH LAKE OF TRINIDAD.[*]

Thursday, the 9th, found me aboard of the *Lady Tennant*, an iron steamer, running down the coast to the lake, in company with Dr. Field of the American Asphalte Company, a gentleman most thoroughly posted in the economic geology of the West Indies, and who is the pioneer in the work of introducing the asphalte of this Island into our market. As the mists of the morning cleared away, we saw that the high rough hills back of Port of Spain suddenly fall off in height, south of the city, and then there stretches far southwards a vast champaign country, filled up with rocks of the cretaceous and tertiary ages. The rising of the mists revealed many beautiful sugar estates lining the shore, and inland a range of low hills. The culminating point of these was San Fernando, about 250 feet high, with a picturesque little village of the same name nestling at its base, with its clean and tidy hospital buildings. Into this port we run, land our passengers and mails, and then steam on southwards. From many of the estates there came off boats to exchange pasengers and mails. Our steamboat was a little Babel of its own; on board of it were Americans, Britons, descendants of French and Spanish, Creoles, Negroes, Hindoos, and John Chinamen. At 11 a.m., we reached Point La Brea, or the Point of Pitch. Here we first saw the effects of this most wonderful asphalte phenomenon. Pitch lined the shore for shipment; the beach itself was of pitch. A reef running far out to sea was also of pitch. The foundations of the houses were of the same material. The streets were naturally paved with pitch. Its inhabitants lived by digging, boiling, and selling the black pitch, when fitted for market; and when they die they are buried in pitch. I noticed that the cemetery of the town was laid out over a bed of asphalte; whether living or dead they were of the pitch, pitchy. At La Brea, the headland, for many hundred feet wide, is of solid pitch, and forms reefs and barriers far out to sea. About one half-mile to the northward is Point d'Or, where pitch has been run down the bluff from above, and has protected the point from erosion. Walking along the shore we found the beach lined with boulders, gravel, and sand, all formed from pitch. At Point Boyer, the location of Dr. Field's company, we found a different aspect of the pitch point. It here seems not so much to be an outflow from the lake, as an outburst from the clays of the hill. A section along the highway, from the boiling-work to the summit of the hill where the lake is seen, 500 ft. above the level of the sea, shows first some six or more feet of pitch at the water-level, and beneath and above it lie 8 ft. to 10 ft. of clays and partly-coloured marls, with ferruginous, sandy masses. Near the surface of the first plateau is a bed of sea shells, then follow clays mingled with pitch for some 20 feet to another plateau, where, again, sea shells are found; from thence up on to the summit of the hill, some 500 ft., clays mingled with "dead" and decaying pitch are to be seen. Along the road there is no sign of an overflow covering the surface as at La Brea, and in the road from La Brea to the lake. Dr. Field's road strikes the lake at its west side, where he holds about one-half of its area (the whole being 102 acres) by lease from the colonial government. Arriving at this point, the lake presents a bizzare appearance. The surface is flat, with innumerable flat islands of pitch, black and naked; at other times covered with a scanty growth of aquatic vegetation. Between each two diminutive islets of pitch there is a *sulce* of pitch filled with water; some of these *sulcie* can be stepped across, others are so wide one must wade if he would cross the lake. From these islets the pitch-diggers pich it up for about 1 ft. in depth. This shallow excavation is then abandoned. In rainy weather the pit soon becomes filled with water. In either case it soon rises up from the bottom; the cavity again becomes filled, and in a few weeks it may be again re-dug for market.

In the wet season the lake must present a beautiful appearance, with its thousand black and green islets, its dark waters, and its deep green herbage of water palms, plantains, and other aquatic and tropical plants. But in this, the last of the dry season, the predominance of pitch, the forests charred by the last year's fires, and the neighbouring dusky workmen bathing, gave the scene a sombre, though vastly interesting, appearance. From the west border I crossed by wading the narrow friths to the eastern, and there noticed the wide depression of its rim, and the great overflow in a wide, deep, black mass, now and then obscured by vegetation, flowing on to the bay, distant a mile or more. The appearance at this point, and on to the sea, is that of a black, viscid glacier, suddenly chilled, and ceasing to flow. Some writers compare the lake to the crater of a volcano filled with pitch, and the lava-flow to the track of pitch. Down this out-flow the road is built. Of course it is naturally paved with pitch. The transportation of many thousand tons of pitch over this road has not much worn it, showing it, even in its natural condition, to be a good paving material.

The pitch at the lake, when freshly dug, presents the following physical appearance:—In colour, dusky-brown rather than black; vesicular, with large cavities, as if once filled with gas. These vesicles appear on the surface like large blisters, often having apertures. The mass is yielding to the tread, and soft to pressure. It tastes gritty, and crumbles easily under the teeth. It is entirely innocent of the peculiar taste of bitumen in its natural condition—not so when it is boiled. It then becomes spicy, sweet, having the peculiar taste of bitumen, and is elastic. Pitch is prepared for market by boiling 24 hours, straining, and then running into barrels or iron forms. Dr. Field's company has two sets of boilers in constant operation, and is producing more marketable product than all the other establishments. As an artical for paving it is now looming into large importance. For this purpose it appears to be unequalled. It is here stored up in large magazines for future use. The area of the lake is 102 acres (114 by survey—H. W.), and the depth, as ascertained by boring, is 800 feet. Its circular form, and its location on the top of La Brea Point, as well as its great depth, give rise to the common opinon that it is the crater of an extinct volcano that is now filled with pitch, and which we call a lake. For gas it seems of equally great importance. Its richness of carbon—if the due proportion of hydrogden can be equally as cheaply supplied—seems to fit it as especially adapted to gas establishments: There is no other point on the globe where the same amount of carbon is stored so accessible to the sea for transportation. Dr. Field's new establishment has all the elements of Yankee thrift and enterprise. A few months ago he suffered loss of all his works by fire. While yet the flames were rolling upwards, his workmen were in the woods felling timber for the new and larger works. From the ashes—still hot—of the burnt buildings arose the well-ordered establishment of the new ones. If pitch covers all the aspect of La Brea, it does not hide the hospitality of the genial doctor. A hot lunch of boiled eggs, toast, and coffee, not forgetting a cold brew (and the doctor knows how to brew), welcomed his brother of the quondam medical profession, who was bound for the gold-fields of El Dorado, in Guayana.

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[*] Dr. Stevens in the *American Gaslight Journal.*

Value of the Larch Tree.—It would be difficult to over-estimate the importance to be attached to the cultivation of this valuable tree in situations where little else could be grown. The Athol family have been celebrated for their zeal in the cause of larch growth. The extent to which their fir-tree cultivation has been carried on in Scotland will be best shown by a reference to the following statistics:—14,096,719 young larch trees were planted in the neighbourhood of Blair Athol and Dunkeld. The plantation covered a tract of land 10,324 imperial acres in extent. The trees flourished and grew rapidly, and on felling one, at the ninety-fifth year of its growth, it was found to be 100 feet long, 10 feet 6½ inches in girth, at five feet from the point at which it was cut through. It contained 368 cubic feet of timber. It has been truly said that the man who plants good trees abundantly stores up wealth for those who follow. An approximate calculation has been made as to the money value of the vast fir forests thus raised by one man's strong will and industry, and the sum arrived at is £6,500,000. In addition to this princely sum we must estimate the thinnings as being worth about £7 per acre of forest. At the death of this noble pine-tree planter, a coffin was constructed from the wood of one of his forest favourites, which, on being felled, measured 106 feet in length.—*Cassels's Educator.*

ABROAD AND AT HOME.

We extract the following from a paper which appeared in the *Engineer* of the 26th ult., under the title of "Army Surgical and Commissariat Appliances":—

It may be said what have we engineers, mechanicians, men of peace and progress, to do with such matters, least of all with the tools of the army surgeon? Now these last are just that about which we think we may have a special word or two to say, and if apology were needed for appearing upon quasi medical, or at least surgical, ground, we might at once call to mind and claim the hackneyed "*nil humanum*," &c. Engineers are but men, and as interested as any others in the chances of severed muscles and broken limbs. But with far more pertinence we might call to witness that the very title of chirurgery—ψειρ. εργον—work by the hand—handicraft *par excellence*—proves how much the surgeon is allied to the mechanician, and how largely the skill of the former has been indebted to the contrivance and appliances produced by the latter. To see how true this is and ever has been, we have only to review what gains to suffering humanity have resulted from the contrivance and gradual perfection of lithotriptic instruments, the mechanical replacements of the dental surgeon, and from the innumerable uses of new materials, such as caoutchouc, gutta-percha, and parkesine. . . .

One is filled with admiration in reading the works of Ambrose Paré, who may be viewed as the creator of modern military surgery, when we see the clearness and rapidity with which the great outlines of operative treatment were arrived at and remain in great part to the present day. Ambrose Paré was a Huguenot, and a barber surgeon—for surgery had not yet become a profession in the sixteenth century—but his rare combination of humanity, common sense, observational power, logical reasoning, and skilful hand, caused him irrepressibly to emerge, and to become the surgeon of successive French monarchs, from Henry II., through the massacring days of Charles IX., down to those of Henry III. This at first obscure and modest native of Laval, in the old province of Mayenne, was in every way a truly great man, one of whom France may well be proud. Amputation before his day was replete with horror. The backward state of mechanical art provided the surgeon with but poor instruments. He severed the limb, flesh and bone, as old pictures and engravings are alone enough to prove, like a butcher; the methods of section, and of conservation of the skin to form serviceable stumps, were yet scarce known; and though tying blood vessels does not seem to have been quite unknown at even very remote periods, it was not practised, and the wretched being, writhing from under knife and saw—for chloroform and nitrous oxide gas were centuries away yet from human revelation—had the flesh seared away with a red hot iron blade, or the end of the stump dipped into boiling oil or pitch, in order that the bleeding might be staunched. Even into bleeding bullet wounds boiling oil was frequently poured as a means to arrest hæmorrage. Paré abolished all this, and tied the arteries with silk. He accompanied the French armies into Italy, and in those campaigns also laid the foundation of that system of field surgery and of its apparatus, which was brought to probably nearly as complete a state as it presents even at this moment, in the hands of Larrey and the other great military surgeons of the campaigns of Napoleon the Great. . . . . .

In the American Civil War railway carriages were specially fitted up for the reception and transport of the wounded, and we believe something of the same sort has been effected by the Prussians, if not by the French. In all these ameliorations what is it that we recognise as the really efficient moving force—acting, no doubt, under the motive desire of kings and emperors to economise the raw material of their detested *ultima ratio*, and of the longing of their fellow men, and women, too—to assuage or minimise sufferings which they are powerless to prevent? It is simply the brain and the hand of the mechanician and engineer, working with the surgeon, and in concurrence with the suggestions of his special knowledge.

It is at best to the reflecting man a disheartening task this help to the sick and wounded, and one too often taken up with much of the hollowness and self-delusion and satisfaction that belongs to those of the order whom Dickens so characteristically sketched in the immortal Mrs. Jellaby. If we may judge from most of the thundering and exaggerated letters and "appeals" for help and so forth that now fill our papers, a large proportion of this cheap benevolence is misdirected, and based on much ignorance of actualities, and of the utter disproportion between means and ends. We hope to say something more upon this in another article, for, indeed, it is in part the sight of those frantic demands for "old rags to scrape into lint"—when unbleached calico, specially fitted and made for bandages and dressings, can be had at twopence per yard, and when as much "charpie" can be made in a day by machinery in Manchester as all the ladies and gentlemen of these interesting associations will make were the war to last a year—that has suggested to us an article or two upon mechanical appliances and helps for the wounded in war. We cannot enter in detail upon these now, for our space is more than exhausted, and the present article must be viewed by our readers as only a sort of broaching of our subject. Meanwhile may we just remind in all soberness and gravity these writers of stimulating appeals for money, and rags, and what not, and those hysterically merciful ladies and gentlemen who take so great a professed interest in the sick and wounded of the two nations gone by the ears—neither, probably, caring much for our solicitudes because they are divided between adversaries, if, indeed, not chiefly so far given to one, and because both know enough of actual war realities to know full well the little we could in any case do to help them—of the solemn saying upon a like occasion of the late Robert Hall, the celebrated Dissenting minister, "That Philanthropy alone is genuine that glows with a warmth proportionate to the nearness of its object." What have *we* got to do with cut up Prussians or French, whilst at every street's corner may be seen—whilst every newspaper column is full of scenes of savagery and cruelty—the children of neglect and ignorance at home. Are women kicked to death less objects for your solicitude, ladies, than those fine fellows, light haired Dacians or black bearded Gauls that so engage your imaginations and interests? Must you have war spice, or your benevolence grows cold and flavourless? Within a gunshot of where we write a crowd of men and boys—aye, and of women too—occupy, day after day, the noontide of that time which should be spent in labour, in small gambling in the open street, diversified with filth, swearing, and fighting. We see them at the same—worse than idleness—day after day. No one, policeman or other, interferes with this wholesome liberty of the subject; it is a back slum, decent people don't see it—why should the authorities? These men *never do a day's work;* idle by day, thieves and burglars by night—in the battle of life these are the brigands that wound morally, if not actually, all around them. Would it not be better, ladies, that you dropped the rag scraping—leave that to a machine, which a machine can do, if needful at all, in far better fashion and cheaper—that you devoted your philanthropy and your energies to a nearer object, and helped as best you could in teaching these—your own countrymen—that if any man will not work neither let him eat. But even that seems obsolete and forgotten in our coddle-thief and humanitarian country and time.

Manchester New Town Hall.—The tender of Messrs. George Smith and Co. of London, has been accepted for the erection of the superstructure of this building. There were in all eight tenders, Messrs. Smith and Co.'s being the lowest, amount £192,574.

THE LATE DANIEL MACLISE, R.A.

The Council of the Royal Academy appointed Mr. Edward Davis, sculptor, to execute a marble bust of the late Daniel Maclise, to be set up in their gallery to his memory, and the model is now in the sculptor's studio. Maclise sat to Mr. Davis some years ago, so that the bust represents him in early life. It is a beautiful head, full of life and animation; the hair is, perhaps, a little over massive, but none who knew Maclise even in late years can fail to recognise the likeness. The Council have been fortunate in their selection.

In the notices following the lamented death of this great artist, many inaccuracies were committed as to his earlier days and later opinions. One may well ask who is to write history, when we find as to a man born in our own time, and living amonst us, neither age name, country, nor parentage, is correctly given. The fact is, there was a desire in after-life to forget the early days, and it seems pretty clear that at one time, at any rate, Maclise strove to show that he was not an Irishman, but a Scotsman; but this was only a passing weakness. From the minister of the Presbyterian Church, Prince's-street, Cork, we learn the true circumstances of his birth as recorded by a predecessor in the ministry, the Rev. T. D. Hincks. It seems that in the month of March, 1797, the "Elgin Fencibles" came to Cork to do duty, and attended regularly at public worship in Princes-street. On December 24th of the same year, "Alexander McLish, soldier, Elgin Fencibles Regiment, was married to Rebecca Buchanan, daughter of Mrs. Buchanan, of the Almshouse, with the consent of his officers and in presence of his sergeant." The offspring of this marriage consisted of five sons and two daughters, the eldest son, Daniel, afterwards R.A., being baptized on February 4th, 1806,—that is, five years previously to his reputed birth! Alexander, before this time, had given up "soldering" and taken to the craft of shoemaking. He lived in Castle-street, and afterwards removed to South Main-street, where he kept a leather shop. His wife, Rebecca, familiarly called "Beckey" McLish, was for many years employed as a pew-opener at the Prince's-street Church. Young McLish (or, as afterwards spelt, Maclise) was sent to an English day-school in Cork, and was early known as a clever sketcher and painter of soldiers, horses, and artillery, executed on pieces of cardboard, which he sold to his schoolfellows.

The late Richard Sainthill, F.S.A., early aided him in his education, and Sir Thomas Deane, the architect, always a friend to rising talent, was afterwards amongst his friends, and bought many of his sketches. When Maclise first came to London he lodged with a Mrs. Pearse, in Arundel-street, Strand (not Norfolk-street, as stated). He was at that time in somewhat straitened circumstances, and had to work hard, but soon made his mark, and when he died his will was proved under £40,000 personalty.

Maclise painted one of his two sisters, Isabella, in several of his pictures; she is the most prominent figure in "Snap Apple Night." Maclise was a well-educated man, of a refined and gentle nature, an excellent writer, and a good poet.—*Builder*.

NOTES OF WORKS.

A new branch bank for the Ulster Banking Company is to be erected at Granard, from plans by Messrs. Thomas Jackson and Son, Belfast. Tenders till 12th prox.

A commodious and substantial building has been erected at Charleston-road, Rathmines, for the purposes of a Wesleyan sabbath school. Mr. Thomas Holbrook was the architect, and Messrs. Beckett the builders. The cost was about £400.

The Corporation of Waterford have resolved to adopt Mr. Hawkesley's report to provide a water supply from Knockaderry, at an estimated cost of £35,000. Application will be made in the ensuing session of Parliament for a bill to enable the project to be carried out.

COLOURS AND DYES IN EARLY TIMES.[*]

The subject of colour, now so much discussed in connexion with architecture and sculpture, is interesting in more respects than one. Colour has also a sanitary aspect. The houses we live in, the food we eat, the fluids we drink, and the clothing we wear, dispayl it. Our very tastes, bodily and mentally, are influenced by colour. To its influence and production, in a domestic and sanitary point of view, we will first look. There is hardly anything in nature or art colourless, and a certain colour, to certain minds, produces a feeling of pleasure and comfort, or otherwise. Independently of the fine arts, and of Nature's landscape, we are governed by colour. The female dress or head-gear, or the man's coat or vest, is as often chosen for its dye as for its texture; but not one out of the ten thousand who are more or less influenced, or who even talk glibly about colour, gives one moment's thought to how these beautiful dyes in articles of their daily clothing are produced. The history of the art, in its relation to civilisation and sanitary progress, possesses much interest and deserves attention.

The early inhabitants of the British Islands understood, not only the art of making several kinds of linen and woollen cloth, but were acquainted with native modes of dyeing them. We are told by Strabo and Dion of the principal colours worn by the ancient Britons, which appear to have been yellow, red, and black; and Giraldus Cambrensis, writing in the twelfth century, tells us that the Irish wore frequently black, which he avers was principally made from the wool of their black sheep. The history, romances, and poetry of the Kelts furnish us with abundant proofs that it was saffron or yellow colour that predominated, and for which the greatest fondness was shown. Of the other colours, red and crimson are often mentioned. Robes of these colours have often been worn. Several Irish statutes, however, bear testimony of the propensity of the Kelts for yellow. Among the Gauls and ancient Britons the principal colours were black, crimson, purple, and yellow, and there were also several among the Kelts. While we learn a good deal from history about colour, the majority of our historians are altogether silent about its production, or of the materials used in its composition. In considerable travel through the British Isles, extending over many years, we have picked up from usages, recollection, and mouths of the people themselves, in distant localities, the information we have been unable to obtain elsewhere. Some years ago, on the coast of Wales, and on the south-west coast of Ireland, we found traces of the primitive modes of dyeing, and the methods used for producing the materials employed in the production of some very beautiful dyes and colours. Yellow was, in former times, and recently, a favourite colour with both sexes, but principally with the fair sex. In England, Ireland, and Wales, women dyed their chemises, veils, petticoats, and bodices, and men their shirts, vests, and trousers. In Ireland, after the invasion of Henry II., Acts of Parliament were passed to prevent the English settlers from following the Irish custom of dyeing their garments yellow. The English statutes assert that the colour was saffron. We wonder if, by saffron, was meant the crocus, as we cannot find any evidence that the early Irish ever cultivated the crocus. Its introduction into gardens in that country is of a recent date. It was hardly imported from abroad by the common folk, or even others, as its expense would preclude it from being commonly used. Saffron probably meant any yellow colour. The wold or weld, *Reseda luteola*, sometimes called dyer's weed, used so extensively in this country, was also used among the Irish, and was known to them by the name of *buidhmor*, or great yellow. We are aware that the Irish used the plant to dye their woollen and linen stufis with different degrees of colour, and fixed in with urine. The colour thus obtained was not given to fade; it resisted damp or wet for a considerable period, and possessed another property, thought to be of advantage to the poorer classes—it required littte or no washing.

If we are to credit Morysson, the Irish of the period he alludes to were very sparing of their clothes, and were not addicted to wearing them out by washing, frequently not taking their shirts or chemises off until worn out. The truth of this must be qualified by suggesting that it must be the very lower orders who would thus wear out their under-clothing without cleansing. It is asserted that washing was not necessary in some instances, as these linen garments became so thick and close by the colour and fixing employed as to become nearly impervious to dirt or wet. This assertion must also be received with considerable allowances. The black colour which Cambrensis speaks of as being general, from the fact of the existence of black sheep being in the country, is not borne out on examination. All the sheep were not black, and we find that the black colours were of a deeper hue; and consequently, if black wool was even generally used, a deeper tint was employed. We find that such was the case. The lower orders, down to a few years ago, in remote districts, had their mantles, trowsers, and cloaks of this colour; and the following was the method employed for producing the colour or dyes:—A bog-mire was procured; and this consisted, as all are aware, of decayed vegetable matter of an astringent quality. The colour was fixed by the same means as we have before mentioned, a means still used, more or less, throughout the three kingdoms. The colour produced by the bog-mire was of a jet or deep black. This was a most lasting colour when once properly fixed; the weather could not affect it, and it retained its brilliancy while a portion of the cloth remained. If coarse woollen cloths could be thus dyed by the humble and unlettered of such ineffaceable hue, it occurs to us that clothiers would be successful with fine linen stuffs also. Persons of rank in England formerly, and very generally in Ireland, had their garments, which were made of fine stuffs, dyed purple and crimson colour.

We find, in some of the ancient Ossianic and Keltic poems and romances, frequent mention of purple (red and blue) garments. Many of the Irish and Welsh peasantry by the seashore, in the last century, and early in the present, were engaged in collecting the mosses that grew upon the rocks and stone, for the making of purple dye. The Irish called it *corcair* and *arcell*, and by the Erse it was known as *corkir*. The fine bright crimson colour was obtained from the finer kind of *corcair* scraped from the rocks, which was afterwards dried in the sun, and reduced to powder; then infused in urine for nearly the period of a month. The *arcell*, or coarse kind of moss, produced the purple colour; it was also similarly treated, and made up into balls with lime. It produced a beautiful purple colour. Early in the present century large quantities of colours and dyes thus made were sold in the public market-place in Dingle. The very same description of moss in nature and property was largely imported to London from the Canaries and the Azores, under the name of Orchil. At the date we are speaking of, £10,000 or £12,000 annually were paid away for foreign moss, and this same *archil* or *arcell* could be procured in any quantities on the south-west coast of Ireland, and on other sea-beaches in Great Britain. The Irish produced also from this moss orange and bright scarlet colour. This they accomplished by dyeing the stuff first yellow and afterwards crimson.

Dr. Nicholson, the antiquary, when Bishop of Derry, in 1725, intending to prepare a natural history of his diocese, wrote to his several clergy to make collections in their several parishes. A Rev. Robert Innes, rector of Magilligan, in the county of Derry, responded, and in 1732 the rector published in London seven letters, addressed to his lordship, of a very interesting kind. From one of these letters we glean a few more facts in corroboration of our own researches and experience. One extract will be interesting:—"The Irish have herbs for diet, for physic, and almost all uses. They use a *pentaphyllum rubrum*,—in the Irish language, *crowlean*,—to thicken their milk suddenly, by rubbing their vessels with it; and, by the way, I cannot think it the same with Parkinson's or Ray's, for this carries no red flower, nor any flower but purple hairs on a strawberry-like button, but whether I mistake them, my lord, I will not be particular. The tops of the yellow ladies' bedstraw they use for dyeing yellow, and the roots for a madder red. Crother, a sort of moss on stones, dyes a good gold colour. Corkry, another scurf on stone, dyes a peach colour; the roots of the white water-lily, a black. In a word, we can dye most colours with our native growth, but blue, or what depends upon it. The roots of tormentel (in Irish, *namnat*) hath been used by the Irish to tan leather."

It would appear from the above interesting record that the Irish in Dr. Nicholson's day, —or, say, a century and a half ago,—had no native method, no plant indigenous to the soil, for producing blue. It might be true as far as Derry was in question, but it is not true of the whole country.

The plant well known in this country as woad was extensively grown in England for many years—it produced a permanent blue dye. This plant must have been known in the sister kingdom also, though not so soon. We cannot say we met with it much in its wild state anywhere except in the immediate districts where it was extensively cultivated, and in places where the seed was likely to be drifted by the wind. Blue, as a general colour, does not appear to be in much repute among the early inhabitants of the British Isles, although we read of the ancient Britons dyeing their bodies with a blue colour. In the present century, in the three kingdoms, blue colours in articles of wearing apparel appears to be more sought after than formerly. Blue, for many things, is a more lasting colour than black; while lime and mortar will affect black cloth, and turn it yellowish, blue will resist its effect.[*] Indigo now is gradually superseding the use of woad. The latter we have known to be greatly adulterated, and which, though sold as woad, fully two-thirds of it was composed of a variety of wild and cultivated plants ground up altogether, dried and rolled up into balls for use. The public have been thus cheated out of their proper colour and dye, cheated in articles of clothing as well as eating and drinking, through believing they were purchasing stuff that would wash and hold their colours fast. A dress, of course, that does not hold its colour, though warranted by the seller to do so, is simply a robbery. The seller knows pretty well, from the price which he pays the manufacturer, whether the article is a fast colour or not; and if he sells it to the struggling tradesman or tradesman's wife as a fast colour when it is the reverse, he is obtaining money under false pretences, and he should, without any ceremony, be at once indicted. This is the sanitary aspect of the case, in the interest of the health and living of the poor.

We will adduce a few more particulars concerning the dyes and colours in use by the ancient British and Irish ladies. Dion and the venerable Bede inform us that they dyed their linen a beautiful crimson colour, which neither the heat of the sun nor the continuance of the rain could injure. The colour was produced from a small shellfish called *cochleæ*, and was named accordingly *coccine*. We are not told by any of our ancient writers the species of shellfish. We have sufficient knowledge to be certain that it included the periwinkle and a limpet of black, red, white, brown, yellow, and sand colours. The method of obtaining the colour or dye was pretty extensively practised at one time on the western coast of Wales, and on the eastern coasts of Ireland, principally Wexford and Wicklow. The fish was turned upon a stone or some other solid body, with its mouth underneath, and without injuring the fish the shell was carefully broken. The shell being picked off, a white vein presented itself, extending transversely in a hollow or furrow near the head. This might be lifted out by a pointed instrument. When the periwinkle was used the shell was not injured. In this instance the vein was seen lying on the head. This, being pricked with a needle, emitted a few drops of a milky white liquid. The process might be repeated for four or five days without injuring the fish. If letters or figures were drawn with the liquid obtained from either fish on linen, the characters first assumed a light green, then a deep green, next a full sea-green, afterwards blue, again a deep purple, red, a perfect set of chamelion-like variation, all in a few hours, while exposed to the sun. When the sun has done all it can do, domestic art steps in. By washing it in hot water and soap, the purple colour then becomes a beautiful crimson, which none other of the elements can change, —sun, rain, nor washing. The early Britons are said to have dyed much with this colour, but we doubt it. To dye thus on a large scale would lead to the destruction of immense quantities of fish. With only six or seven drops to be obtained from each fish, the sacrifice of the little marine mollusca would be something awful to contemplate,—sufficient, we opine, to start into existence a new society for the prevention of cruelty to —univalves. Some hint that the celebrated Tyrian dye of the ancients was produced from these shell-fish; but it is more likely that the famous Tyrian purple dye was obtained from orchil or corcair, so plentiful on their rocks.

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[*] From the *Builder*.

[*] We have seen young walnuts used often for dyeing purposes, and we have known them to be used in different parts of Great Britain and Ireland, for producing a deep yellowish brown colour. We believe them to be a powerful dye, and when fixed with a pure mordant, the colour would be everlasting. Lighter or brighter shades can be managed by the treatment given. It is surprising what beautiful dyes or colours the early inhabitants of these countries produced, destitute of any knowledge of chemistry, and of the ingenious method they devised for fixing the colours produced.

If *cochleæ* could be procured in sufficient quantities to dye large pieces of linen, the beauty of the fabric could be enhanced, and also the price, the colour thus obtained being so beautiful, exceeding that of corcair.

Foreign importation, mechanical appliances, and chemistry have of late years been fastly superseding old native ways and means. Yet it is hardly to be doubted that, in the bustle and din of now-a-days, much that is valuable is lost sight of, because it has dropped out of use, at a time when there was no method employed or properly known for utilising it. We have under our very feet material for many things quite equal to what we often send several thousands of miles to procure. Our mountains, bogs, and sea-beaches are mighty and gigantic undeveloped resources of fuel, building materials, food, and minerals. By the talismanic touch of industry and energetic labour, they may be made to yield animal sustenance for our bodily wants and materials for our domestic uses.

Of colour in the concrete and in the abstract much might be usefully written, as also of the manufacture and manipulation of colours for fine art and domestic purposes; but these latter branches of the subject would lead us into extensive technical fields, foreign to the immediate topic.

THE SEWAGE QUESTION.[*]

Fully agreeing with Mr. Justyne as to the desirability of the utilization of sewage, we are yet unable to admit that, in the little volume before us, he has furnished us with a "practical solution" of this extremely important question. Many instructive facts are brought before us, in a definite and intelligible form, in these pages, which to a certain extent are of value, as furnishing a sort of handbook on the subject; but the absence of exhaustive information diminishes the value both of the facts actually presented and of the conclusions drawn from them. In a "history of sewerage," commencing with the date of the Exodus, we might reasonably have expected to find some more definite account of the London Main-Drainage Works than that they were completed "at an enormous expense." The report of the Metropolitan Board for the year 1867 states that "they have been called on to improve the London portion of the river at a cost of £4,200,000."

We are presented with a chemical analysis of the ingredients of sewage, together with a calculation that the *excreta* of each individual possess a fertilizing value to the amount of £1 sterling per annum. The difficulty of the case is that this value, for the most part, has hitherto been attained only on paper; and that, while the claims of hygiene are imperative and the removal of nuisances is an essential part of the police functions of civilization, the best, or indeed only sure, method of practical application of the results to agriculture is yet matter of very fierce debate.

The main object of the book appears to be the recommendation of what is called the A B C Process, invented by Mr. Sillar. Divine inspiration is not directly claimed for the invention, although we are told that "the idea occurred to the inventor through a Biblical allusion to 'the blood of bulls and goats, and the ashes of a heifer, sprinkling the unclean.'" As few persons will admit that the inspired writer had any occult reference to the mode of purifying sewage in the passage which Mr. Justyne has had courage to quote, it would have been more satisfactory to be furnished with detailed information as to the ready consumption of the manure produced by this process, which involves the application of alum, blood, and charcoal, at the selling price of £4 15s. a ton." The report of the River's Pollution Commission as to the results of the A B C Process at Leamington, in December, 1869, was adverse. We are told that this was owing to an unfortunately heavy fall of rain, and to the process being "then in its infancy." We shall be glad to receive definite information as to its success when it has attained maturity. It must have grown very rapidly, if the defects which were noticed by the commissioners in December last, "have been long since remedied."

Advocacy of this extreme description discredits at once the advocate and the cause. It is a thousand pities that the miasma attendant on sewage should exert, apparently, so irritating an effect on those who write on the subject; and that there should be so much difficulty in arriving at a clear knowledge of facts. It is within our recollection that great things were promised by the application of a process similar to, if not identical with, the A B C process, to sewage in Belgium, some fifteen years ago: information as to the success and failure of those operations would have been of much value in a discussion of the subject. The financial result of the sewerage works of Paris, we are told, "is anything but a success."

Considering the large amount of educated and intelligent attention which, during the last fourteen years in particular, has been turned to the subject of the defecation and the utilization of sewage, there can be little doubt that any practical method of extracting and removing the twenty shillings' worth of fertilizing elements that each of us is said to contribute to the sources of the national wealth, that should not cost more than nineteen shillings and sixpence, would be readily adopted. The difficulty of the case lies here: the chief fertilizing power of sewage resides in the dissolved salts contained in the liquid. The mechanically suspended solids can be removed by subsidence or by other means, but they possess little fertilizing value. The liquid which runs away, even when chemically clarified, takes with it the chemical wealth which, as yet, has only effectually been secured to agriculture by the direct process of sewage irrigation. This process, however, is only applicable in limited localities, and, unless we are misinformed, to certain crops, especially Italian rye-grass. It is, moreover, a question of doubt whether a long-continued course of this irrigation does not actually poison the crop.

Added to this inherent difficulty, is the artificial obstacle caused by our bad mechanical arrangements for the discharge of the surface rain-water, which we barbarously turn into the sewers; thus at once wasting a precious supply, of which each year we are more in need, and diluting the sewage to a degree that renders it unmanageable. One hundred tons of liquid London sewage contains, according to the analysis of Mr. Etheridge, 82·72 lb. of mechanically suspended solid matter, the agricultural value of which is only two shillings and twopence halfpenny. The chemically dissolved matter in the same one hundred tons is 245·95 pounds in weight, and its value is fifteen shillings and fourpence halfpenny. This analysis, if trustworthy, must form the key to the practical solution of "The Great Sewage Question."

MIDLAND GREAT WESTERN RAILWAY.

In their half-yearly report, just issued, the directors of this company say "they are happy to have it in their power to pay to the original shareholders an increased dividend at the rate of 3½ per cent. per annum; that of June, 1869, being at the rate of 3 per cent.; June, 1868, 2½ per cent. This has been done without in the least interfering with the extensive relaying which has been for some time carried on along your line, and which must greatly tend to enhance the value of your property." They have resolved to hand over the Athenry and Tuam line on the 28th prox., as agreed on in 1860, a proposal for further renewal not having been deemed satisfactory by the latter named company. "Although your directors consider that the Athenry and Tuam line should properly be attached to the Midland system, it cannot be overlooked that the lease, in the ten years of its existence, has entailed a loss of upwards of £30,000 on your company. Your directors, having reason to believe that a large trade in a class of goods more suitable for carriage by canal than rail can be secured if cargo steamers are placed on the canal, they recommend to you that steamers be purchased for this purpose. The successive developments of your system, and the gradual increase in your traffic, have long called for improved accommodation at Broadstone station. Your directors believe that valuable improvements, and of great importance to the public, can be effected by the acquirement of a small portion of the ground within the wall of Grangegorman Prison garden, of late years practically unused. They have, with this object, applied to the Board of Superintendence, by whom they have been met in a fair and liberal spirit, and trust the negotiation now in progress may be carried to a successful conclusion. In carrying out the improvements sought to be effected at Broadstone—approaches to the New Cattle Market, and other objects—it may become necessary to obtain powers by Act of Parliament. Your directors do not contemplate any bill which could provoke opposition, and consequently do not anticipate any serious difficulty or expense on that account. The Government having taken up the various lines of telegraph throughout the country, the representatives of the Postmaster-General have made a proposal to your directors for a lease of your telegraph system. The proposal was by no means such as your directors considered you were entitled to, and consequently no arrangement has as yet been come to. Your directors will take care that any agreement entered into shall be such as to repay you for the valuable interest you are in a position to hand over to the Postmaster-General. The increased traffic has required the ordering of 100 additional waggons, which, with 100 purchased last year, will make an addition of 200 purchased within the last eighteen months. Your directors, feeling it their duty as much as possible to promote, for the future, the manufacture of rolling stock at home, have nearly completed sheds for the construction of carriages and wagons, which they have reason to believe will prove inferior to none of the kind hitherto erected in this country. The cheap system of parcel rates introduced into Ireland by your company has proved so far successful, and your directors trust ere long they may be afforded an opportunity of joining in an international system for the transmission of parcels—a system which, in your directors' opinion, would not only benefit all companies joining therein, but at the same time tend to great public convenience. Your directors have applied to the Commissioners of Public Works for an advance under the 'Artisans and Labourers' Dwellings Act, 1868,' to enable them to erect labourers' cottages for the servants of the company, as recommended by the Shareholders' Committee in 1864."

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[*] "The Practical Solution of the Great Sewage Question." By William Justyne. London, Day. Extracted from the *Athenæum*.

MUNICIPAL ITEMS.

AT the quarterly meeting of the Municipal Council, the following was amongst the important business transacted by the LX. entrusted with " Home Rule " in our city:—

THE WIDENING OF THE QUAYS.

Mr. Byrne said that a variety of opinions existed with regard to whether the Corporation ought not to avail themselves of the present opportunity afforded by the main drainage scheme for increasing the width of the quays from the King's Bridge to Carlisle Bridge, the river at present being of unequal width in its course between those points. Without absolutely proposing that this should be done, but with a view to obtaining such information on the subject as would enable them to judge of it, he begged to move—

> " That it be a direction of the Dublin Main Drainage Committee to have plans prepared with specifications and estimates for the making of the portions of intercepting sewers which will be along the line of quays, to be constructed inside of the present line of the river walls instead of under the present roadways, by removing towards the centre of the river the present river walls, from Carlisle Bridge westward, so as to leave the river in every part of uniform breadth, equal to its present breadth at Carlisle Bridge, and by which the roadways at each side of the river will be considerably widened, and cover the site of the sewers, and that the committee report to this house thereon, after consultation with Messrs. Neville and Bazalgette in relation thereto."

Sir John Gray, in seconding the motion, said he thought if the plan could be carried out without any very great increase of expenditure it would be very beneficial to the city.

Mr. Dennehy characterised the proposition as *extravagant* and *preposterous*. To disturb the present quay walls and build others would entail a vast expenditure.

Mr. French reminded the house that they could not disturb the present walls without the consent of the Port and Docks Board.

Mr. Byrne said that the obtaining of plans would not cost very much, and if the proposition could be carried out within their means, it would be a great benefit to the city. Besides, there was a remote possibility that the railways would avail themselves of the increased width of the quays, to run their trains from terminus to terminus along them, and so contribute considerably to the expense.

Sir John Gray suggested that the committee should be only directed to obtain outline plans and approximate estimates.

THE POST-OFFICE RAILINGS IN HENRY-STREET.

Mr. Norwood moved that a memorial be addressed to the Postmaster-General, requesting that he will sanction and direct the removal of the railings from the northern flank of the General Post Office, which obstruct the passenger traffic and impede the transaction of business in Henry-street. He said that in May last both the Post Office officials and Col. M'Kerlie, chairman of the Board of Works, had stated that there was nothing to prevent this very desirable improvement being carried out. Since then the Board of Works architect had raised certain objections to the contemplated work, inasmuch as he had resolved upon devoting the basement storey to uses other than those of stores.

Mr. Byrne—What about Ball's Bank?

Mr. Norwood—I have authority to state that the proprietors of Ball's Bank have consented to the removal of the railings in front of their premises. I have at present in hand a sum of £200 to cover the cost of the improvement.

Mr. Norwood then moved that the plan for the widening of Grafton-street be referred to the College Railing Committee for examination and report. The fact was that a large amount of property in the neighbourhood would very soon fall into the hands of the Corporation, and a most eligible opportunity was presented for carrying into effect a very much-desired improvement.

NEW TOWN HALL, LARNE.

THE formal opening of this building took place on the 25th ult. It has been erected at the sole expense of Charles M'Garel, Esq., J.P., D.L., and by him handed over to trustees, for the use and benefit of the town. The style of architecture is Gothic of a French character, the details being simple but very effective. On plan the new buildings comprise assembly-room, public reading-room, library and museum, board-room, kitchen, and caretaker's apartments, &c. The assembly-room is 60 feet long by 26 feet wide, having platform and balcony, with kitchen, serving-room, and pantries adjacent, also ladies' and gentlemen's retiring-rooms, &c. The public reading-room is 30 feet by 24 feet, over which is placed the library and museum, same size, having curator's apartments attached. The tower is 14 feet by 12 feet 6 inches, and rises to a height of 90 feet, terminating with a wrought iron vane. Between the reading-room and assembly-room is placed the principal staircase, leading to the museum and balcony. The architect was Mr. Alexander Tate, C.E., F.R.I.A.I., County Surveyor; Mr. Samuel P. Close, A.R.I.A.I., acting as clerk of the works. Messrs. Stewart and Co., Belfast, were the contractors, who deserve every credit for the manner in which they carried out their contract. The cost of the building was £5,500.

The noble donor was entertained in the evening at a public dinner given by the inhabitants in the new hall. The chairman of the Town Commissioners (Dr. Charles Ferris) occupied the chair on the auspicious occasion. The toasts usual at such festive gatherings having been proposed and responded to, the chairman said—Gentlemen, we now come to the gist of the story—we come to our worthy and respected guest, and by-and-by I shall give you the toast of the evening, to which every man in this room who has a heart in him will respond, and cheer until he make the welkin ring. Before proposing your health, Mr. M'Garel, I have the honour to read this address to you, submitted by my fellow-townsmen for that purpose on this most happy occasion.

> " HONOURED SIR,—As chairman of the Larne Town Commissioners, and also on behalf of all the other inhabitants of this town and neighbourhood, I have much pleasure, on the occasion of opening this Town Hall, which has been built and furnished at your sole expense, in conveying to you our sincere and hearty thanks for your great liberality in erecting for our use this splendid edifice in which we are now assembled. When first you announced to us your intentions with respect to this building, you expressed a wish that it should be made available for the benefit of the inhabitants of this your native town of all denominations. You also stated that, in the matter of expenditure, you would impose no limits upon the gentlemen whom you named to carry out your munificent views. It is only necessary to look around to see that these your generous designs have been generously fulfilled.
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> " At this time we desire further gratefully to commemmorate your liberality towards us on many previous occasions. Some years ago you erected spacious and handsome residences for two of the teachers of the Larne National School; and more recently you provided us with a commodious cemetery, to supply a want which had long been much felt in our community.
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> " For all these manifestations of your bounty we are, and ever shall be, sincerely thankful; and we have no doubt that they will cause your name to be gratefully remembered for many years in the town and neighbourhood of Larne
>
> " With best wishes for the well-being, both here and hereafter, of your amiable consort, whom we are happy again to see amonsgt us, and of yourself, we again thank you."

And now, gentlemen, remember the toast I am about to give you, and which you are about to drink, is to the honoured man who has done all this good work. Enjoying, as he does, a princely fortune—a fortune which only a very few, even in these wealthy dominions, can aspire to, and, best of all, a fortune made by his own head and hands—with a London residence in the very heart of Belgravia, with the princes and nobles of the land about him, yet he does not forget his native town, but comes to us every year to spend a portion of his time on his estate at Magheramorne. And now, gentlemen, let us drink the toast with three times three.

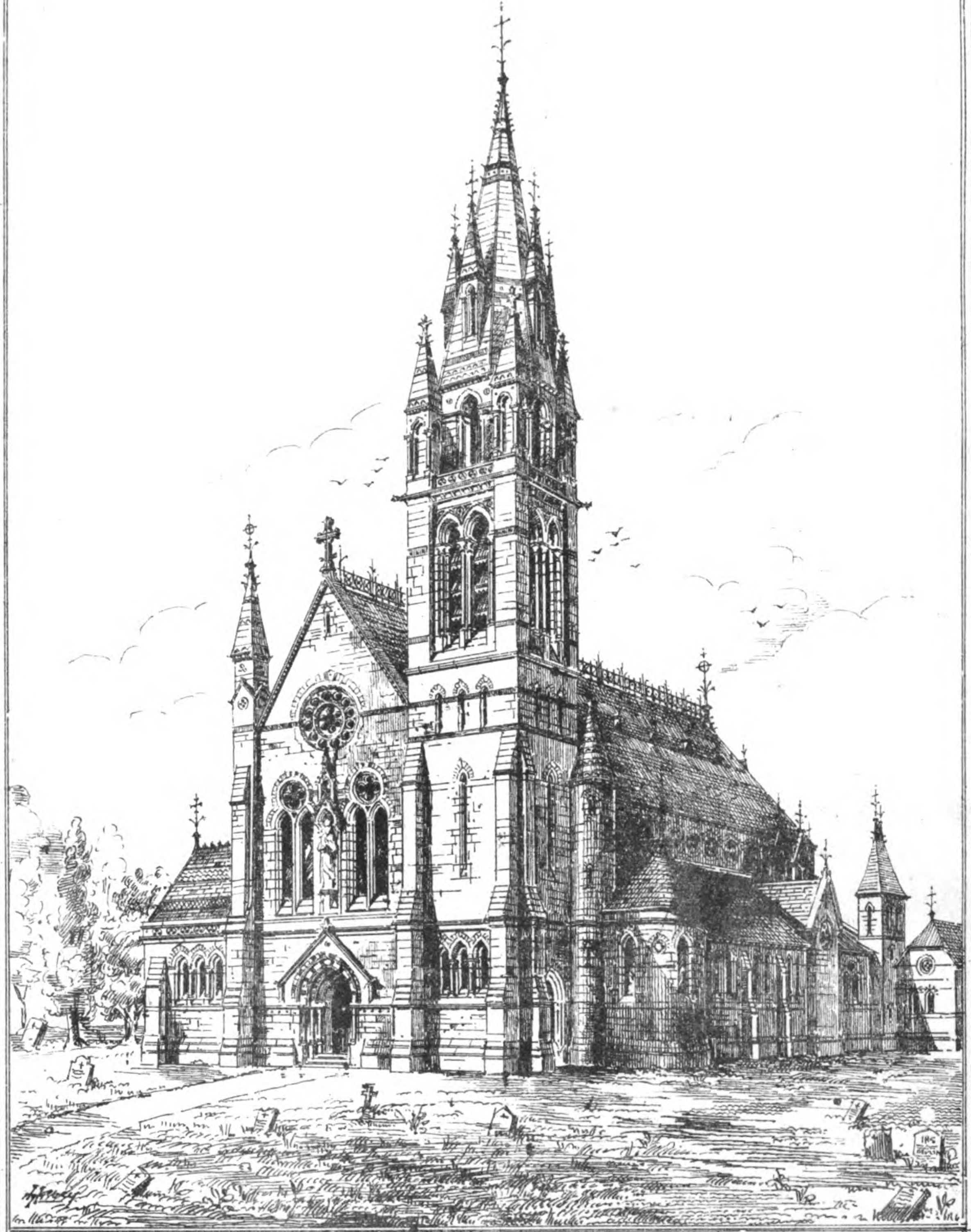
Mr. M'Garel, who on rising was loudly cheered again and again, said—Mr. chairman and gentlemen, I return you my grateful thanks for the kind manner in which you have received the toast from the chair, and in drinking my health. I can assure you I deeply feel the honour you have done me in assembling here in such vast numbers this day. I can never forget the kindness I have ever received in this town and immediate neighbourhood. I have been amongst you for many years—from my boyhood to the present time—and I can never forget the land of my birth. It is now a very long time since I first came amongst you, and I have been dwelling here a certain portion of the year—as much time as I can afford, having many avocations to attend to, though not engaged in business, yet I hope doing good to others. I thank you most sincerely for the kind manner in which you have received the toast, and I return you my grateful thanks.

Mr. M'Garel next rose and said—Gentlemen, it gives me much pleasure in proposing the health of your worthy chairman. I have had the happiness of knowing him for a long period of time, and the respect in which he is held in the town and neighbourhood is beyond anything. The best proof is that he has been selected by his fellow-townsmen to fill the highest position they could place him in—that of chairman of the Town Commissioners, and he is now in that chair doing duty as chairman of the commissioners. He has filled that situation to the satisfaction of his townsmen, and I hope he will live long to do those duties.

The chairman, in responding, said—Mr. M'Garel and gentlemen, I really have not a word to say, but to apologise for my incompetency to fill this situation. I am here by a train of circumstances over which I really had no control, unfortunately for this brilliant assembly. I cannot help it; there are other gentlemen in this room—one of our worthy croupiers to your left; I mean Mr. Casement, a brother commissioner, a county magistrate, and chairman of the board of guardians, and respected by us all. If we had him again in our town chair for this happy year you would have been far more fortunately fixed. I beg, therefore, your kind consideration and patience for this evening. If by any word of mine I may mar the pleasure or displace the mirth of this good meeting, throw not the blame on me but on my fellow-townsmen. Mr. M'Garel and gentlemen, I am exceedingly obliged to you for the kind manner in which you have drunk my health.

The picture of Mr. M'Garel was here uncovered amidst enthusiastic cheering. The artist was Richard Waller, Esq., and the cost about 180 guineas.

The chairman said that, whilst the splendid hall was being built, his fellow-townsmen, grateful for Mr. M'Garel's noble present to the town, thought they could not adorn it with anything so good as his own portrait. As a work of art, and a faithful likeness, they would all agree that it did the artist infinite credit. This picture he was instructed by the subscribers that evening to hand over to the trustees of the building as a present to



ST. COLMANS' CATHEDRAL ✠ DROMORE, Co. DOWN.

The Rev William McCartan, P.P., T. Hevey. Architect. Belfast, 1870.

THE LIBRARY
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UNIVERSITY OF ILLINOIS

them, to hold on the same terms as they held the hall. He, therefore, on behalf of the subscribers, thereby declared it from that auspicious evening to be the property of the trustees of the Town Hall of Larne.

Sir Edward Coey said he had been requested by the trustees to accept the picture, and he did so most heartily, not so much for its artistic qualities as for its life-like likeness to the great and good Mr. M'Garel.

The chairman having proposed the toast of "The other guests who have favoured us with their company," the Hon. Edward O'Neill, M.P., responded. He said—Gentlemen, the occasion on which we are assembled to-night is, I think, in many respects a gratifying one. It must be gratifying to the inhabitants of this town that a hall so spacious, so substantial—one which has been erected at no small cost, and which will be an ornament to the town, though usefulness has not been sacrificed to ornament—has been given to the town; and the thought that it has been provided by Mr. M'Garel, a gentleman owning property in this neighbourhood, residing in it, as he does, along with Mrs. M'Garel—whom, along with the other ladies, we are delighted to see present this evening, for a certain portion of the year, cultivating kind and friendly relations with the inhabitants, must, I think, call up pleasing and grateful feelings in our minds. Gentlemen, other evidences of Mr. M'Garel's liberality have been alluded to to-night, and I feel hesitation, especially in the presence of the donor, in alluding farther to them; but I am sure your thoughts will readily supply what I have left unsaid on this point. Gentlemen, the advantages of a hall like the present will, I think, be generally admitted. One of the objects of this hall is, as I understand, to provide a news-room for the town, and this, I think, may be of advantage in more ways than one, for it affords pleasing and interesting recreation to men who may be much engaged in matters strictly connected with their various callings. We are so constituted, gentlemen, that our minds cannot be constantly engaged upon one subject or one class of subjects, and I know of nothing which a young man, who has been engaged in the office through the day, can better do than to turn of an evening into a well-conducted news-room, where he will have an opportunity of learning from good newspapers, and of discussing with learned and intelligent men, whilst lectures, concerts, and other such amusements and means of instruction as may be given in it will, I think, elevate the taste and heighten the appreciation of elevating pursuits.

Various other toasts were given, and speeches made in response; the events of a day not soon to be forgotten by the people of Larne were happily brought to a close.

NEWRY WATER SUPPLY.

At a meeting of the Newry Town Commissioners, on Monday last, Mr. M'Blain said he had a statement to make which could not fail to be of interest. Since their last day of meeting he had met Mr. Richardson, who had asked him if they (the commissioners) were not corresponding with Mr. Hawksley, and he (Mr. M'Blain) replied that they were. In the course of conversation he asked Mr. Richardson if, in the event of Mr. Hawksley adopting the O'Neill's Bog scheme, the Bessbrook Company would oppose the Commissioners in obtaining a Bill to convey water from that place, and Mr. Richardson's reply was that they would. He (Mr. M'Blain) asked him the same question relative to the Glen Head scheme, and received a like reply. In fact, unless the townspeople of Newry would guarantee that no strangers would come to take water from Camlough, the Bessbrook Spinning Company would oppose every scheme—except the Camlough one—that the commissioners would adopt. He thought that under these circumstances, it was a move in the right direction when the commissioners resolved to call in the assistance of Mr. Hawksley. While conversing with Mr. Richardson, he (Mr. M'Blain) put to him a case in point. He asked him that if, supposing he were about to build a mill, and that one contractor offered to build it for £12,000, while another would not erect it for less than £18,000, he would accept the lower tender. Such, he (Mr. M'Blain) argued, was the position of the people of Newry. The chairman said that he felt sure they all should be obliged to Mr. M'Blain for the information he had afforded them. As things now stood the people were to be allowed to bring water from no place except the place that suited the Messrs. Richardson. But their only object now was to put on a bold front and not allow themselves to be dictated to by Mr. Richardson, rich as he was. He deemed it but right to say that the board had done what it could to meet the Messrs. Richardson in anything but a discourteous spirit. He had gone to much inconvenience himself to do so. At one time the Messrs. Richardson seemed very well disposed towards that board, but now the sequel was turning up. As for the people of Newry, he was very much mistaken in them if they were to allow themselves to be dictated to by Mr. Richardson or any person else on such a subject.

THE FOOD OF LIVE STOCK.

The fat of animals is identical in composition with the fatty or oily matter found in plants; and it is believed the fat of the food goes to form the fat of the body. The fatty matter of food is also capable of supplying animal heat. There is this difference, however, between the fatty and starchy matter of food as producers of animal fat; the elements are combined in the fat of the food in the same proportion as in the fat of animals, while in starch, sugar, or gum, they are differently combined; and therefore an animal can produce its own fat from the fatty matter of its food more readily than from compounds not fatty in their nature. A pound of fatty matter is supposed to be equal to two and a-half pounds of starchy matter, for feeding purposes. The more fatty matter, therefore, any kind of food contains, the better it is adapted for the fattening of stock. Linseed (flax seed) contains 34 per cent., or about one-third of its weight, of oil; and is, when properly used, one of the most rapid fat producers we have. The oil is, however, so valuable for other purposes, that the seed is pressed in powerful mills, the oil extracted, and a solid residue or *cake* is obtained, which still contains about twelve per cent. of oil, and is sold under the name of oil cake or linseed cake. Oil cake from linseed, when free from adulteration, is one of the best substances which the farmer can use for fattening cattle and sheep. Rape seed, which contains a great deal of valuable oil, is also pressed in the same way; the oil, called colza oil, so extensively used in lamps, is sold to the oil merchants, and the cake (rape cake), which contains about eleven per cent. of oil, is sold to the farmers for feeding stock. Compared with linseed oil cake, rape cake appears to be very cheap. It does not, however, agree with cattle or sheep as well as lindeed cake, owing to a small quantity of some peculiar compound which it contains. Before using rape cake it is recommended to subject it to the action of boiling water, which dissipates this compound. We are of opinion that rape cake pays best when given to store cattle and milch cows; nothwithstanding the higher price of linseed cake, we fully believe it pays better than rape cake for fattening cattle or sheep.

A cake, called cotton cake, is obtained from the seed of the cotton plant. Made from the whole seed, it is said to be undecorticated, and contains six per cent. of oil, and upwards. When first introduced the husk was not ground in any way; the result was that animals died from inflammation of the intestines, caused by the lodgment therein of this indigestible woody matter; but, as now manufactured, it is safe and good for all stock. When the cake is deprived of this husk, and becomes what is known in the market as "decorticated" cotton cake, it contains ten per cent. of oil.

The flesh-forming constituents of food next demand attention. These supply the muscles of the body, and form the principal source whence the motive force of animals is derived. Animals could not live without those constituents, no matter how liberally we supply them with starchy and fatty matters. The muscles and all the tissues of an animal are continually undergoing decay or waste; even in a state of perfect health and repose this process goes on. If, we wish the animal to keep up its health and condition, the matter removed in this way must be supplied to it in the food. It has been estimated that a man's body is renewed in about half a dozen years. In flesh and bone, therefore, we are not to-day what we were yesterday. The degree of waste which the body of any animal suffers varies with a great many circumstances. Disease or irritation increases it very much. A sheep suffering from foot-rot does not produce as much mutton from a given quantity of food as when free from this affection. A cow of a restless disposition does not thrive as well as one of quiet temper.

Exercise, whether mental or physical, accelerates the waste of the body. The harder a horse is worked, the more food he requires. It follows that in fattening cattle the quieter we keep them the greater the quantity of meat we are likely to get from a given quantity of food, because the less of the latter is expended in supplying the waste of the body.

Woody fibre enters very largely into the composition of our farm crops. It has the same composition as starch, sugar and gum; but as it is indigestible (or nearly so), its chief use is to give bulk to the food. It is found that an animal fed on too concentrated food becomes unhealthy. This occurs to a horse fed exclusively on oats, or a cow fed exclusively on oil cake.

The mineral constituents of the food are required to supply the mineral matter of the body. Bone, muscle, &c., could not be built up in the first instance without mineral matters, and as the latter are wasted like the other constituents of the tissues, the food must always afford a fresh supply. If the food is deficient in phosphorus, the bone is weak, and the limbs unable to bear the animal. We have frequently seen young pigs suffering from weakness of the bone, which may be prevented, and, where it already exists, sometimes even cured, by affording food rich in the substance of bone. Lime, which is a constituent of phosphate of lime, is required to build up the bone. Phosphate and carbonate of lime exist in the ashes of our pasture grasses and grain crops—the seed of the latter being particularly rich in phosphate of lime. The hard shell of the eggs of poultry is composed principally of carbonate of lime, and instinct teaches the common hen to pick up pieces of mortar, gravel, or chalk, which contain this substance. Iron is an essential constituent of the colouring matter of the blood. Common salt affords two most important constituents which appear to be necessary for digestion. Man obtains the saline matter necessary for his constitution in flesh meat, milk, and the common salt which is so universally used at table. Our crops contain comparatively little common salt, and hence it was used so largely by those who lived principally on potatoes. The intelligent farmer also gives common salt to his live stock, knowing that it not only causes them to thrive better, but that it also prevents many diseases which would otherwise effect them. Full-grown cattle may get from two ounces to three ounces of it daily; full grown horses, from one ounce to two ounces; sheep and pigs about half-an-ounce. Grazing cattle and sheep should have access to lumps of rock-salt in the field. Lumps of it may be also placed within reach of stall-fed cattle, or it may be strewed over or mixed with their food. The best way of giving it to horses is by dissolving it in their mashes. It is given to pigs mixed up with their food.—*Baldwin's Handy Book.*

CORRESPONDENCE.

[*It is to be distinctly understood that although we give place to letters of correspondents, we do not subscribe* editorially *to the opinions or statements set forth in same.*]

IRISH GENIUS VINDICATED.

TO THE EDITOR OF THE IRISH BUILDER.

Sir,—Upon my word, Mr. Builder, your London contemporaries are altogether too hard upon Pat. A few weeks ago one of them, who ought to have known better, spoke most disparagingly of the mechanical and scientific acquirements of a certain Mr. Young, who proposes to propel the British public through a tubular drain across the Straits of Dover. Now I beg to assure them and you beforehand that I am no relation to Mr. Young, and that there is no genius in my family of that name in any way related to me by marriage or otherwise. I have heard, however, of a certain Dr. Young, across the channel, who once gave the world his "Night Thoughts," which were very good in their way as extracts for epitaphs in country churchyards; and I knew the "Fermanagh Poet," whom Lord Derby placed on the Civil List: he was a very clever chap at writing doggerels, but, poor fellow, he died the other day in his bath, and I believe his pension dies with him. I know a Dr. Townsend Young, *alias* —— but, no matter, he wrote some books for the National Schools, but he had not a smattering of mechanical knowledge. I knew other Youngs, but who were nothing to each other. All these Youngs, except the "Night Thoughts" gentleman, were Irishmen—but what of that?

Do they mean to say that Pat cannnot claim a practical originality of genius? Now, sir, I will prove to your satisfaction, if you allow me space, that Paddy personified, in many ancient as well as modern examples, is the greatest genius in the world.

In your own line, Mr. Builder, let me remind you that the greatest architect the world ever saw was a Paddy, and he was called in Gaelic Goban Seer. He drew the first plan and specifications, and the round towers were built after his designs. Where are your critics now, sir? Do they mean to tell us that these pillar towers were not grand pieces of architecture, beating Stonehenge and the Peak of Derbyshire hollow? Goban Seer never wrote his autobiography, so the world has been left in darkness as to knowledge whether they were a maiden effort, or as to the cost of materials or supervision in the good old Pagan days, ere Brian Boru was King of Munster. Let me tell you too, sir, for your information, that the grand old roof of Westminster Hall—effigies, spandrils, and all—were from the designs of Goban Seer the younger, and that Grinling Gibbons, the carver, had no right to claim them as his. The oak, sir, too, of which this roof is composed, grew on the site of Smithfield Market, Dublin, and is not "brave old English oak," but brave old Celtic oak. Think of that, sir.

Talking of roofs and round towers reminds me of a respected old parish priest of mine, Father Pat Horgan, of Blarney, Co. Cork, the greatest architectural genius of his day, "the Lord have mercy on him!" What did he do? Why, sir, he bravely upheld the architectural reputation of his great ancestor, Goban Seer. When he was unable to solve the origin (satisfactorily to himself) of the round towers, he had one built after his own design at the end of his own garden, remarking that, "as antiquity completely puzzled him, he was determined to puzzle posterity." Father Pat, you perceive, knew well how to return the compliment to his predecessors.

Perhaps Mr. Young was actuated in a like manner when he ——but, no, it couldn't be. We should, Mr. Editor, make some allowance for *Young* ideas that have not been properly taught how to shoot; and, you must know from long experience, that it is impossible to place an old head on *Young's* shoulders.

Talking of young ideas shooting reminds me of another countryman of mine who was a mechanical genius of the first water. If Mr. Young failed in the science of boring and constructing, the modest Irishman, whose name shall be nameless, who invented a gun for "shooting round corners," succeeded most satisfactorily. Believing that nothing was like leather, he constructed the upper end of his musket of leather, and along the line of the remainder of the barrel he had a running string, somewhat in the manner of the signal cord attached to railway trains now-a-days; by this simple and ingenious contrivance he was enabled to shoot round a corner, right or left. He submitted his novel design to the War Department at Whitehall, but the wiseacres there, as he said himself, couldn't see its usefulness. He next tried the Admiralty, but with like success. Both the Horse Guards and the Marines required rifles that would shoot straight to their mark. So the invention of a clever and mechanical Irishman was pooh-pooh'd. Latest accounts inform me that this marvellous musket with the leather muzzle and the signalling apparatus is now lying in the lumber-room of the Antiquarian Musem of Ballyporeen, along with some of the "plant and rolling-stock" of the Kingstown and Dalkey Atmospheric Railway. Is this fair treatment for Paddy? But I am not done yet. It was an Irishman in the last century who undertook to prove that the sun was a globe of ice. Probably if he had got proper Government patronage and encouragement he would have saved a world of trouble to Mr. Young in his channel scheme, by broaching a method whereby the straits might be frozen over, so that your Cockney sportsmen might skate across, or, *à la* Esquimaux, reindeer it from Dover to Calais. When ices can be made with the action of a little salt and sugar judiciously applied, what would not a series of monster freezing apparatuses with eight millions of money accomplish? As my countryman of the ice idea did not suggest the above ingenious project, I claim it as my own. If it is Irish, I can't help it;—you must blame my parents, who had not better manners, and more common sense, in giving birth to me in an "ill-starred country."

Now, sir, before I conclude I will adduce another instance or two on behalf of Paddy's claim to be considered a genius, and of Ireland being the fruitful mother of geniuses. Was not the great old Fabius of the Peninsular War a Paddy? and was he not the greatest military genius of modern times? And, comparing the past with the present, where is Alexander of Macedon, Hannibal of Carthaginia, Julius Cæsar, or your other classic braggarts, compared with King Dathi, the last Pagan monarch of Ireland? Why, sir, before Romulus or Remus were suckled, Julius Cæsar visited Britain, or Hannibal crossed the Alps, King Patrick Dathi had carried his conquests into Gaul, and after striking terror along the line of the Pyrennees, died in his war harness at the Alps, thus setting a pattern to Hannibal and Napoleon, his imitators in long ages afterwards. Think of that, sir.

Now one other illustration before I close: it is in your own favourite line. Who but an Irishman would ever have attempted to have built a house from the top downwards? Yankee wit has removed houses across the street, but an Irish bishop of the establishment, as was conclusively proved in an article in your contemporary four or five years ago—"Oddities in Architecture,"—built his house from the top to the bottom. Was not he a genius of the first order? After this I hope your compeers will not sneer at Paddy, but award him at least a little more of what he is entitled to, although in the person of Mr. Young he builds his brickwork outside his coffer-dam, which you must admit is a damnably hard task to accomplish, and which, if properly performed, is at least entitled to a pair of tin clasps and a leather medal. Your love of fair play, Mr. Builder, I know will allow me the necessary space to vindicate the mechanical genius of our race, and place it on the pedestal where neither gunpowder nor the billows of the ocean will disturb it, or railway trains in transitu rock it to sleep.—

Yours, Patrick Fitzpatrick,
Stoneybatter, Dublin. (Philomath.)

P.S.—I forgot to include in the above muster-roll of Irish geniuses the name of Mr. O'Shaughensy, an engineer practising in India, well known to yourself. When the telegraph poles and wires were being put up in India, the monkeys used to cause dreadful havoc by climbing up the poles and swinging out of the wires. Rewards were offered for the best plan of keeping the monkeys quiet. Everyone puzzled their heads, but Englishmen, Frenchmen, and Scotchmen, and even the tarnation quick Yankee, failed to suggest a remedy. The immortal O'Shaughensy hit upon the expedient of enclosing the poles two-thirds of the way up with an umbrella-shaped guard. This was a humane as well as a clever invention. The monkeys might climb up on rainy days if they were inclined, but they could not get over the expanded umbrella; they were covered, but they were also confounded and discomfited. I may mention to you, also, that the monkeys ever afterwards hated O'Shaughensy, and they used to howl in chorus whenever he passed with his Gunter's chain and theodolite for having destroyed their swing swang. Think of that. P. F.

INSTITUTE OF CIVIL ENGINEERS.

TO THE EDITOR OF THE IRISH BUILDER.

Sir,—Along with "A.I.C.E., M.I.C.E.I. (original)," and, I am sure, many others, I am much obliged by your having published a list of the present members, &c., of the Institute of Civil Engineers of Ireland. I miss the names of many old and valued friends; and whether they have been invidiously omitted, or whether they have ceased to be members, I have no means of knowing. As you are aware, sir, I am a member of an old family of architects and engineers, and had completed the term of my pupilage in an architect's office in this my native city about two years prior to the founding of the School of Engineering in T.C.D. by the friend of my youth, the late John Killaly; but after an absence of a few years from Ireland, I found on my return that a number of young gentlemen, (who had got the smattering attainable by two years' study of science in the School of Engineering) actually looked down on poor old chips of the non-University block, and did not hesitate to declare them as mere pretenders. They carried their small impertinencies into the College; many of the original men, who had been educated at Kilkenny or Castlepollard, left the Institute, and perhaps others were "rejected or ignored," as your correspondent says, by "the junior society sitting within the walls of Alma Mater (T.C.D.)" As for myself, although a M.R.I.A., a F.R.A.H.S.I., and A.I.C.E. (England), I did not dare to seek membership in the Irish Institute, from the almost certainty of rejection, through not being a "University man." The list shews some curious anomalies, not the least of which is the name of a highly-respectable wine-merchant; but why he is included amongst the Associates of an Institute of Engineers, is a puzzle. Pray favour your readers with the original list, if possible to come at it, and use your influence in getting the old men of the profession together, that they may revive the society, and, if possible, bring back those evenings of scientific enjoyment in which the fathers of the profession held delightful converse, whilst the young aspirants reaped substantial benefits; in those days when neither architects nor engineers were manufactured to order, on the shortest notice, and when something more than two years' study in an engineering school was considered necessary to fit them for the responsibilities of their profession. Trusting you will excuse the length of this communication, I am, sir, yours, &c.,

Derrick.

THE EASTERN, IRISH, AND SCOTCH ROUND TOWERS.

TO THE EDITOR OF THE IRISH BUILDER.

"In vain the wild storms of ages have rolled
O'er the round towers of Erinn so lofty and bold;
They have nobly withstood every rude winter's blast,
And in beauty and grandeur remain to the last.
Oh! talk not to me of the marble of Rome,
I love the the Phœnician old pillars at home;
By the mountains, and rivers, and lakes of our clime
They still stand proclaiming a nation sublime.
The days of Baal worship for ever are o'er,
The Druid's Be-il-tin shall burn no more;
The sun in full radiance and splendour may beam,
But the Celt feels and knows 'tis not the Supreme."

Vide J. Darling's *Poem on the "Round Towers."*

Sir,—In my letter of the 1st instant I demonstrated the origin, use, and design of the Eastern, Irish, and Scotch round towers. Since then my attention has been directed to a recently-published work, from the pen of Mr. Waring, which is ably criticised in the English *Builder* of 3rd inst. This gentleman ignores altogether the claims of Phœnician rule and culture exercising so powerful an influence, at an early period in our history, over these islands, and avows his inablity to discover similar structures in the east. I concluded my last letter by stating that I should in my next "enter more minutely into the Phœnician associations on which I base the scriptural, historic, and traditional proofs of the great argument." At the time I did not anticipate having another disputant to grapple with. However, I shall now direct your readers' careful attention to the following proofs, and leave it to their candour and intelligence to decide whether or not historical evidence dissipates the illusions of the anti-Phœnician school. I contend that the origin of the round towers dates from the period when the apostate kings of Israel and Judah erected pillars in the East to conduct the worship of Baal. This system of irreligion prevailed in the East 2,700 years ago, and, after diffusing its pernicious influences throughout all the Canaanitish provinces, was introduced into Babylon and Phœnicia, and brought by the latter race to Ireland, and from thence extended to Scotland, in which countries they erected those round towers, on the model of the Eastern buildings. Ireland was known to the Phœnicians nearly 1,000 years B.C. Homer received information from the Phœnician voyagers of a "sea of isles," "the abodes of the blest." Hanno and Himilco (Phœnicians), 700 years B.C. made an expedition into the Islands of the West, and other Eastern travellers prove that they not only explored the West, but also penetrated into the remotest regions of the North and South. The Phœnician prosperity and glory had reached its acme in the time of Solomon; and scripture and tradition both record that the high places (or towers) were the only buildings up to the time when the wise King of Israel erected his magnificent temple to Jehovah, in the building of which the Phœnicians contributed their share of materials. The people, up till then, sacrificed in high places. The pillar, watch tower, and high tower were all alike used and adapted for the same purpose. Holy writ proves this even in connection with the true sacrifice, ere apostacy predominated. Josephus records that Samuel the Prophet, when invading the Philistines, and after offering sacrifice, he gathered "his host together to a certain city called Mizpeh, which in Hebrew signifies a watch-tower, and betook themselves to their prayers." Mark the connecting link relative to high places—2 Kings xxxiii., 13. The high place—the place on which Solomon erected a tower to Ashtaroth, the mount of corruption. Solomon was led astray by his Egyptian and Phœnician Baalist wives, and erected towers for their devotion, and also built a vineyard at Baalhamon. He let out "the vineyard unto the keepers; everyone for the fruit thereof was to bring 1,000 pieces of silver." When our blessed Saviour attacked the Pharisees and high priests who officiated in those buildings, they "perceived he spake of them," and used every means to destroy him. The tower was in the midst, the centre of the fruits, and it was considered the best proof of their zeal, just as in our day the erection of a church is looked upon as evidence of Christian piety. In St. Mark xii. 13—"They sent unto Him certain of the Pharisees and of the Herodians to catch him in his words." The Herodians were Baalists; the Pharisees paid into the treasury of the towers; and Josephus states that Herod build two round towers near Jerusalem, and that even under the Jewish economy the sacred vessels, treasures, &c., were safely deposited in these buildings. The high places of Baal were built on the mountains and in the valleys; they were sun temples and astrological watch towers. The pillar guided to the land of promise. The tower was indicative of fruitfulness, when the produce of the vineyard was to be paid. Thus we have the true and false sacrifice, the true and false oracle, the true and false prophet, and the true and false tower. In fact, everything that could possibly be adduced from scriptural, profane, historic, or traditional evidence favours the Phœnician origin of the round towers, and I may conclusively meet Mr. Waring's erroneous hypothesis with Windele's apposite conclusion, after minute and laborious investigation—"The advocates of the Christian origin have in vain sought for a prototype in Christian lands, whilst their opponents have found it in India, Persia, and Babylonia, and amongst the remains of the ancient Phœnician colonists of Sardinia." Mr. Waring considers the Sardinian *nurhage* (which "have the appearance of the low watch towers") corresponds with "the martello towers around our coast." How does he account for the Eastern round towers described by Lord Valentia; and when he compares the accurate drawings, side by side, of the Eastern and Irish buildings, and the similarity in architecture and description shown in the recent valuable work by Marcus Keane, Esq., he cannot, by any plausibility, sustain the erroneous view he advocates of dissimilarity between the Eastern and Irish towers. General Vallancy, Thomas Moore, Henry O'Brien, Dr. Lanigan, and a host of erudite antiquaries refute his theory. Again, Mr. Waring, while differing from Westropp's erroneous *fanaux de cimitiere* theory, still considers that the word "minaret," being derived from the Arabic of "menarah," a lantern, may have something to do with night beacons. There is nothing new or original in this opinion; for that celebrated linguist, Dr. Adam Clarke—that bright luminary who reflects honour on our country, and of whom Irishmen of all creeds and classes are justly proud,—states that the Mahommedan towers—"meenars" or "minarets"—"similar to those in Ireland, have been always in use for the purpose of announcing the izen, or canonical hour of prayer, in all their large cities, towns, &c. These towers are built very much in the manner of the Irish towers; they are round, terminate in a conical roof; have doors at different stages, and several at the top, just under the conical roof, as at Antrim, Swords, and Munster Boyce"; and the learned divine concludes that the architectural peculiarities are alone sufficient to determine the Asiatic origin of our round towers. Although differing from Mr. Waring's conclusions, I regret, with the editor of the English *Builder*, that his "remarks upon the early architecture of Ireland and Scotland are disappointingly brief." Still the work is a valuable addition to our antiquarian literature; and, if the conclusions cannot bear the test of historical investigation, the research evinced in compilation will repay the antiquarian's prelection over old theories, clothed in eloquent delineation and interesting detail, which, if it have not the effect of gaining converts, will at least repay perusal, and is deservedly entitled to the meed of making the most of a bad argument. I had intended to enter more minutely into the historic evidence, but your readers will, I am sure, pardon the digression, as the *apparent* novelty of Mr. Waring's view might mislead favourers of the Petrie school, and cause them to imagine they had found another Gamaliel, at whose feet they might sit and derive anew inspiration confirming their cloictheach and safe-keep theories. Thanking you for past favours, and trusting in my next to elucidate the discrepancies of his theory, I remain, sir, your's obediently,

Caleb Palmer.

Ashbrook, Raheny, Sept. 13, 1870.

ZYMOTIC DISEASES.

The circumstances under which zymotic diseases are enabled to spread are the following. First of all, the zymotic principle itself must be present; next, a condition of the atmosphere or of the surroundings, favorable to the spread of the disease; small-pox and scarlatina are always present in England, yet it is only occasionally that the sporadic cases multiply so greatly as to become epidemic. Thirdly, a medium for the conveyance of the contagious matter to the individual or some part of him, where it can easily enter his blood; it seems probable that most of the zymotic poisons enter by the mouth. Lastly, an individual in a state fit to receive the germ of the malady, and allow it to multiply.

Knowing that these four conditions are necessary for the spread of these contagious diseases, the means at our disposal for their prevention will be shortly alluded to. With regard to the zymotic substance, the agent which most effectively destroys it is heat. A temperature of 120° Fahr. will destroy the contagious material contained in clothes, papers, &c., thus most conveniently disinfected, the most delicate fabrics remaining uninjured after exposure to so low a temperature. Several chemical agents are said to have the power of altering or changing the composition of the contagious material so as to render it innocuous. Amongst these are especially to be mentioned carbolic acid, chlorine, and nitrous acid.

The state of the surroundings is very important, but unfortunately little is known of the meteorological changes which accompany an epidemic. A temperature of 32° Fahr. seems to check the spread of some contagious diseases, but the whole of our information on this point is most meagre. One of the surrounding conditions is known to be extremely important—the dilution of the contagious material with fresh air—this is without doubt the most important agent that we possess in checking the progress of a contagious disease. Free, efficient ventilatian of a house will often protect its inmates from infection from without. Some persons seem quite incapable of receiving the zymotic diseases during the whole of their life; while, on the other hand, certain conditions of the system predispose to them; mental anxiety, worry, and trouble of any kind render a person peculiarly liable. So do fear of taking the complaint, a poor state of health at the time, great bodily fatigue and exhausting labour, above all, the fasting state. A person who has not eaten for hours will be far more likely, other conditions being equal, to be infected, on exposure to contagion, than one who has just taken a meal of meat and wine. We cannot always control our emotions or secure a tranquil and happy frame of mind; but at the worst, most of us can afford a dinner and a dose of stimulant. After exposure to infection, a glass of sherry, or brandy and water, is said to prevent the complaint from taking root; it would always be well to try this remedy when a person has been near a source of contagion.

Amongst the poor, the want of good food and clothing, the indifferent light which does not allow them to see the dirt about them, and which they therefore do not remove, the overcrowding and bad ventilation, all render them exceedingly predisposed to the acute specific disease. Accordingly we find that an outbreak of zymotic disease always makes head among the poor first; amongst them it gathers its strength and multiplies its points of contagion before it attacks the rich man's family. Indeed, there is one disease—typhus fever—which is unknown except among the extremely destitute; clergymen and doctors occasionally die of it, their profession obliging them to visit the sick poor, but under no circumstances does it ever *spread* among people moderately well to do.

After a consideration of the preceding remarks, the question, "How may zymotic diseases be prevented?" may be more easily answered. Individual action can do little; it is to the State that we must look for efficient interference for the suppression of these complaints. Laws compelling the drainage and water supply to be at least effective, and forbidding the frightful overcrowding of dwellings which now prevails in every large town, ought to be made; every case of zymotic disease ought to be watched by officers of health, since that one case may become the centre of extension to the whole town, country, or even kingdom. Individuals may, however, do a little in preventing these complaints, especially in their own households, but their exertions can scarcely reach beyond this. In the first place, let the water that is used for drinking be most carefully seen to *at all times*. One of the most important means of prevention is also within the reach of individuals; it is quite simple, needing no apparatus or chemicals, and is the free and complete ventilation of all rooms and passages by means of windows opening on the external air, assisted, where there are opportunities, by fires in open grates. This method yields to none in efficiency; it is of far more use than any chemical means of disinfection, useful though these may be; the only effectual plan is complete and thorough ventilation.

GREAT CLOCK AT STRASBURG.

The great clock at Strasburg is one of the wonders of the world about which travellers are very apt to romance a little, making it out more wonderful than it really is. But for all this it is an extraordinary piece of mechanism, and its performances entitle it to rank high in the records of horology. All those who pass through Cheapside witness hourly—nay, four times an hour—with some degree of wonderment the activity of a set of figures which strike the chimes and the hours outside the house of one of our most enterprising citizens. But these are wonderfully simple operations as compared with those of the celebrated Strasburg clock, of which the citizens are justly proud. Before detailing these performances and describing the clock, it may be well to refer to the history of this ingenious piece of mechanism. The clock stands in the cathedral, its origin dating as far back as 1352, in which year it was put up under the patronage of Berthold de Buchek, then Bishop of Strasburg. Of the artist's name nothing appears to be known; he must, however, have been considered a prince among clockmakers in his day, for the clock appears to have been a highly successful work of art for the period. It was divided into three parts, the lower portion exhibiting a universal calendar. In the middle part was an astrolabe, and in the upper division were the figures of three kings and the virgin carved in wood. At the striking of each hour the three kings bowed to the virgin, whilst a carillon carolled a cheerful tune, and a cock crowed and clapped his wings. In course of time, however, this clock got out of order, and in 1547 its repair was committed to the charge of Dr. Michæl Hera, Chretei Herlin, and Nicholas Prugnor, three mathematicians of repute. They died before their work was finished, but it was taken up by Conrad Dasypodius, a pupil of Herlin, and who completed his task in four years. The clock went until the year of the great revolution, when it struck for the last time. Nearly fifty years passed, during which time the clock gradually fell into a very dilapidated state. It was then resolved once more to restore it to its former working condition, but this was found to be impossible, as the works were eaten up with rust and verdigris. At length one Schwilgue, an artist and mathematician of Strasburg, offered to repair, modify, and reinstate the clock, which task, it is recorded, he commenced on June 24, 1836, and finished in four years from that time. It is stated that Schwilgue received an order to construct a similar clock for a cantonal capital in Switzerland, but his townsmen, jealous of the horological fame of Strasburg, put out his eyes, and thus prevented him fulfilling the order. We have no authority for this statement, and therefore only consider it in the light of one of the travellers' tales to which we have already alluded. The mechanism of the new clock was placed by Schwilgue in the old casing, the number of the figures having been increased, and their appearance being improved by jointed limbs. The quarter chimes are struck by figures representing the four ages of man, which move in a circle around a skeleton mower. The hour bell is struck by a genus, a figure of an angel at the same moment turning an hour-glass, through the neck of which the same sand is kept running year after year. Every day at noon a procession of the twelve apostles takes place around a figure of the Saviour. Each one in passing inclines towards the central figure, which, when the circuit has been made, extends its hands as in the act of blessing. During the process a cock flutters his wings, opens his beak, and crows three times. The clock shows the month and the day of the month, the sign of the zodiac, the Dominical letter, the sidereal time, the Copernican planetary system, and the processsion of the equinoxes. Its mechanism is so perfectly elaborated that it marks the 29th day of February in every leap year. With this perfection of detail, no wonder that the citizens of Strasburg are proud of their cathedral clock, and no wonder either that travellers are neither slow to visit it nor to enlarge upon its performances to an extent somewhat beyond its real capability.—*Mechanic's Magazine.*

DUBLIN AND ANTRIM JUNCTION RAILWAY.

The ordinary half-yearly meeting of this Company was held on the 24th ult. in their office, Scottish Widows' Fund Buildings, High-street, Belfast. The directors present were:—Thomas Dowling, Southsea House, Threadneedle-street, London (chairman), Vaughton William Houghton, 35, Waterloo-street, Birmingham; William Francis Tredwell, Hednesford, Staffordshire; Bickerton Whitehead, 206, Hagley-road, Birmingham; Captain Douglas Gobrana, Crumlin. George K. Smith, Esq., Solicitor; John Bower, Esq., Engineer; and William Mackay, Esq., Secretary, were also present, and a considerable number of shareholders.

The secretary having read the advertisement convening the meeting, read the

REPORT OF DIRECTORS.

"The directors submit the accompanying statement of accounts for the half-year ending 30th June, 1870:—In the last half-yearly report, the directors referred to a contract that had been concluded with Mr. William Fredwell, of Handsworth, Birmingham, for the completion of the works upon the line, and to a loan of £40,000 that had been granted by the Public Works Loan Commissioners in furtherance of that object. The contractor immediately afterwards commenced operations, which he has since prosecuted with vigour. And the directors refer to the report of the engineer, submitted herewith, showing the extent of those operations during the past seven months. The first instalment of £10,000 of the loan was paid before the commencement of the works, and the second, for a similar amount, was received within the last two days. At a special general meeting, held on the 7th January last, the company approved of an application being made to Parliament for an Act authorising the company, in addition to their ordinary loan capital, to borrow on mortgage of the undertaking any sum not exceeding £40,000, and for running powers over the Ulster and other adjoining railways. Petitions were presented against the Bill, so far as it related to running powers; but these provisions were withdrawn upon a satisfactory proposal from the Ulster Company being accepted for the working of the line for seven years, and an Act authorising the additional loan capital, to the extent sought by the company, was passed on the 4th July last, a print of which will be laid before the shareholders at the present meeting. The financial operations of the company will be materially facilitated by the passing of this Act. And it now remains for the shareholders to sanction the exercise of the borrowing powers it confers by a resolution which will be proposed for their adoption."

Mr. Bower (engineer) read the following report:—

"Gentlemen,—I have the honour to report that the works of your railway are rapidly approaching completion. They were resumed in February last, under contract with Mr. Wm. Fredwell, who has since that date displayed most creditable vigour in their prosecution; insomuch that a length of 16 out of 18½ miles of the line (as regards earthworks and masonry) is now ready for permanent way. Thus, of 656,000 cubic yards of earthwork in the whole line, 594,000 are complete; of 35 road and river bridges 28 are complete; excepting some work in copings and iron superstructure, four are in advanced progress, and three only remain to be commenced. The culvert masonry may be reported complete, and the station buildings and platform works are in progress. The wrought-iron lattice girders of the Crumlin river and Road Bridge (100 ft. span) have been put together, and will be in place in a few days; and those of the Sixmilewater Bridge (two spans of 60ft. each) are on the ground, and ready for erection. The rails and fastenings of over eight miles of permanent way are on the ground, and a considerable length of line has been ballasted. The work in this department, however, has been delayed in consequence of the difficulty of freightage from the Riga, where the sleepers of the whole line were ordered four months ago, and are now only in course of tardy arrival. Another cause of delay has occurred to account for the want of progress at the town of Antrim, which otherwise would now be reported—viz., in the contractor having been prevented (by Lord Massareene's agent) from proceeding with the works in a field in the occupation of a yearly tenant on that estate. However, notwithstanding these causes of delay, I have no doubt of the completion of the works and opening of the line for traffic within the time named in the contract."

Dr. Hume (Crumlin) said he was very glad on this occasion to see that progress was reported, as they had been for many years in a stand still sort of way. He lived about the centre of the line, and he could safely say that the engineer's report was not at all coloured. The engineer had referred to a cause of obstruction in the completion of the line in the neighbourhood of Antrim, and, knowing Lord Massareene to be a popular young nobleman in the district, he would like to know more from Mr. Bower as to the cause of the obstruction. This, he thought, was due to the shareholders.

Mr. Bower said that the explanation Dr. Hume required was outside the usual scope of an engineer's report; but the directors, through Mr. Pakenham and otherwise, having exhausted every means of getting a settlement with Lord Massareene, and thus keeping the matter quiet, he had no objection to state the circumstances. In the year 1864 the occupation interest in the field referred to was paid to the occupier, John Crawford, who thereupon signed a receipt to the company for the amount and a stamped contract giving the company power to take possession at any time hereafter. The agreement and receipt were here read by Mr. Bower, who proceeded to state that the original prospectus of the company in 1860, and several letters in the handwriting of the late Lord Massareene, proved the deep interest with which his lordship promoted this undertaking, and that he, in common with the other great proprietors, gave his fee-simple interest in the land for the line through his estate for original shares of the company; and he subscribed for 200 additional shares in the original stock, for which he undertook to pay cash. For the latter his personal estate has been made liable. As regards the former, the late lord at the time of his death had not signed the regular conveyance of the land to the company, and the directors applied to the present Lord Massareene after that event, and about the time of his own majority, when, as well as on a subsequent occasion, he undertook to complete the conveyance, and accept the shares of the company, thus continuing and confirming the acts of the late Lord Massareene, which were clearly for the benefit of the town of Antrim and of his tenantry, as well as that of the company. Mr. Bower continued to state that Lord Massareene has since declined to carry out these engagements, and has demanded to be paid £2,000 (the whole value of the land as agreed to be taken in shares by his father and himself), and, by Mr. Cordner, J.P., he has prevented the execution of the works, the latter alleging that Lord Massareene is in actual possession of it, although it is well known that the tenant (Crawford) sowed the crop now standing on the ground, and was in occupation of it on the date of his resistance as mentioned. Early in the month of July the contractor proceeded to execute the excavations in the field referred to, when Mr. Cordner came to the ground, and, in a state of excitement, laid his hands upon one of the gangers, and afterwards brought a number of men, who, by his direction, defaced and filled in the work as fast as excavated by the navvies, and forced the contractor's men off the ground. Having allowed a sufficient time to elapse for these circumstances to be understood, and Lord Massareene having refused to carry out the arrangement, and with a full personal knowledge of these circumstances, he (Mr. Bower) thought it right to instruct the contractor to proceed again with the works in the field in question, in which course, he said, he had no doubt of the support of the directors and shareholders of the company.

Dr. Hume said that if Mr. Bower's statement be correct—that this man, who had received their money, refused to give up the land, or that Lord Massareene's agent attempts to prevent the completion of the works unless £2,000 were handed over to him, he, for his own part, would accept the responsibility of pushing on the works. Only for this obstruction, he had learned from the contractors that the line would have been almost ready for opening, and it was entirely out of the question that the line should be kept back. If Lord Massareene were injured, he had a legal remedy; but for any person to bring a mob, and prevent their men working, was not to be tolerated.

Mr. Bower—I will accept the responsibility.

The chairman said he was desirous of seeing the line himself, and he had gone over it several times, and they had asked Mr. Pakenham to meet them, with a view to come to an amicable arragement with Lord Massareene. Mr. Pakenham did so, as Lord Massareene had told him on several occasions that he would carry out the arrangements of his father. He (the chairman) was sorry to say that Mr. Pakenham's interview had not led to any arrangement. The company had its just rights—it had done nothing to prejudice them, and it would take the proper course to maintain them. He begged to move the adoption of the report.

Captain Douglas suggested that probably an amicable settlement with Lord Massareene could still be come to.

Dr. Hume said that if Mr. Pakenham could not do so no other person could. He seconded the motion.

Mr. Bower said he believed that Lord Massareene is not acting of his own volition, but under the advice of Mr. Cordner.

The motion was put, and passed unanimously.

The chairman moved the next resolution—authorising the directors, under the Act of 1870, to borrow an additional £40,000.

Mr. Pakenham seconded the motion, which was passed unanimously.

The Chairman haying left the chair, and Mr. Pakenham having been called thereto,

On the motion of Mr. M'Cance, seconded by Mr. M'Connell, a vote of thanks was passed to the directors.

Mr. Pakenham, in conveying the vote, said—I am sure in this, that used to be my accustomed place, I can heartily congratulate the shareholders on the progress of the line. The present directors have found their labours a much more easy task than we did; and we must all congratulate ourselves that a line which will be of so much use to the people of our part of the county coming to this great commercial city, will soon be opened.

THE WORKING MEN'S INTERNATIONAL EXHIBITION.

The Committee have begun to cater somewhat better than in the commencement for the amusement of the visitors, and at least once there has been lately what may be called a sort of musical festival, comprising a large number of musical performers, instrumental and vocal. The day attendance is not very large, but the evening attendance is always pretty considerable. One day last week Mr. Gladstone and Mrs. Gladstone paid the building a visit, and were received by all present with every mark of respect. The Irish goods, fabrics and machinery, were attentively viewed by the Premier, and some received unqualified praise. The Irish plough, which we have already described in our previous notice as the work of Mr. Johnston, of Castleblaney, was presented on this occasion to Mr. Gladstone, who accepted it amid the usual honours. A coat of Irish frieze was also pressed upon the Premier, the manufacture of Messrs. Simpson, and Co., Belfast, and presented on their behalf by the firm of Messrs. Samuel, Brothers, Ludgate-hill. We believe that the Premier was also prevailed upon to taste a small glass of Dunville's Belfast "native." Mr. M'Creery the superintendent of the Belfast section, accompanied Mr. Gladstone through a great portion of the building, and took peculiar pains in explaining everything connected with the Irish goods and their exhibitors.

The awards, we understand, will be soon made, and the Exhibition will hardly close much sooner than the first week in November.

MISCELLANEOUS.

Breakwater in Passage Roadstead.—The Waterford Harbour Commissioners have resolved to construct a breakwater in Passage roadstead, at a cost of £10,000, on the plan of Mr. John Coode, C.E. The breakwater will make Waterford harbour and Passage roadstead one of the most convenient, and as safe as any in the kingdom. The Marquis of Waterford contributed largely towards the work, and has granted the commissioners leave to quarry on his property and use material gratis.

Halfpenny Postage Labels and Stamped Newspaper Wrappers.—The following notice to newspaper proprietors and news-agents has been issued from the General Post-office:—In connexion with the reduction in the rates of postage on inland newspapers, printed matter, and patterns or samples, which will take effect on and from the 1st of October, halfpenny postage labels and newspaper wrappers bearing an impressed halfpenny stamp will be introduced. A supply of each is in course of issue to head postmasters in the country, and to the district offices and receiving offices in London. Previously to the 1st of October, the sale of these labels and wrappers will be confined to newspaper proprietors and news agents who might possibly be inconvenienced were time not allowed for preparation; but as the reduction of postage does not commence before the 1st of October, anything bearing a halfpenny stamp posted before that date will be treated as unpaid. Newspaper proprietors and news agents, by applying to a head postmaster, will be able to obtain at very short notice any quantity of these labels and wrappers. The wrappers (the dimensions of which are 14in. by 5in.) will be sold at the following prices:—500 for £1 2s. 6d., 100 for 4s. 6d., 50 for 2s 3d., 25 for 1s. 1½d., 10 for 5½d., 5 for 3d., 2 for 1½d., 1 for ¾d.; but a discount of one per cent. will be allowed to persons purchasing at one time not less than £10 worth of either labels or wrappers. Newspaper proprietors and newsvendors who may desire to have their own wrappers or paper impressed with the halfpenny stamp must make application, not to the Post Office, but to the Commissioners of Inland Revenue. Wrappers must be of white paper.

Prize Essay.—The following are the conditions under which the prize of £20 offered by the proprietors of the *Gardener's Magazine* is to be completed for:—"The essays may be of any length, and may be written on one or both sides of any size paper, but the adjudicators will give preference to the one which deals with the subject most comprehensively, practically, and briefly, the object being to obtain useful information on the sources of water supply for farm and garden purposes, and the best means of storing, lifting, and distributing, with a view to economical agricultural results. The manuscripts are not in any case to have the names of the writers attached to them, but each must be marked with a monogram or motto, and be accompanied with a sealed envelope, bearing a corresponding monogram or motto, and enclosing the real name and address of the writer. When the adjudicators have made their decision, the envelopes will be opened, and the unsuccessful manuscripts returned to their owners. The essay to which the prize is awarded is to be the property of the editor of the *Gardener's Magazine*. The 1st of October will be the latest date on which competing essays can be received.

The South London Tramways.—The following is the method adopted in the construction of the tramways of South London:—A trench is first dug in the centre of the public carriage-way, ten feet broad and two feet deep. The bed is paved with old bricks closely packed together, and covered with concrete one foot six inches in thickness. Upon the solid mass are placed iron shoes four feet apart, which receive quarterings of yellow deal, six inches deep, four inches broad, and twelve feet in length. These are kept five feet apart by iron bars, which drop transversely into sockets prepared for their reception in the shoes. Upon the quarterings are laid the iron tramway, four inches in breadth, in which is a groove to receive the small wheels, by which the carriage wheels are regulated. The inner half of these trams is corrugated, and affords a bite for the revolving wheels. The interstices are filled in by blocks of granite six inches square, set in with concrete, and which, when complete, form a level and compact road of great durability.

The Civil Service.—One of the conditions of the regulations for the Civil Service competition of 1871, just issued, is that the candidate should be of "good moral character." It is with no uncivil intention that we take leave to advise the Civil Service Commissioners to be particular in actually applying the moral test. We fear the condition has sometimes degenerated into a mere matter of form; otherwise how should we have heard of a recent instance of one newly passed Civil Servant proceeding to the place of his appointment in India, and carrying with him the value of £200 worth of books, ordered of a London bookseller, without paying for the same, or, seemingly, without intending to pay for them? Is it then consonant with good moral character, for young men holding Government appointments, to incur debts after this fashion? We consider the incurring of debt, without reasonable means of payment, decidedly immoral and damaging to character, and we think the Commissioners are bound to prevent such debts being incurred by the best means in their power. Perhaps the dismissal of a few newly made civilians who happen to be in a state of impecuniosity and "indebtedness" would act as a preventative to others about to incur debts in this country before departing for India, where they know they, cannot easily be reached.—*Broad Arrow.*

HEALTH OF DUBLIN.

In the Dublin registration district (which extends over an area of 9,745 statute acres, and had, by the Census of 1861, a population of 314,409), the births registered during the week ending Sept. 10th, amounted to 157—79 boys and 78 girls. The average number in the corresponding week of the years 1864 to 1869 inclusive, was 164. The deaths registered during the week were 158—77 males and 81 females. The average number in the corresponding week of the previous six years was 158. Seven deaths resulted from fever, viz.:—3 from typhus, 2 from typhoid or enteric, and a like number by simple continued fever. Scarlet fever froved fatal in 13 instances, showing an increase of 6 as compared with the preceding week. Measles caused 2 deaths whooping cough 5, and croup 2. Twenty-five deaths resulted from diarrhœa; of these 21 were children under 5 years of age, and the remaining 4 were persons 60 years old and upwards. Two deaths were referred to simple cholera Fifteen children died from convulsions. Bronchitis proved fatal in 10 instances, and pleurisy in 2. Apoplexy and paralysis caused 3 deaths each. Heart disease caused 6 deaths, and aneurism 1. Seventeen persons died from phthisis or pulmonary consumption, 6 by mesenteric disease, 4 by hydrocephalus or water on the brain, and 1 by scrofula. Two deaths were the result of violence, viz:—1 by fractures and contusions, and another by burns. Seventy-five of the persons whose deaths were registered were under 5 years of age, and 27 were aged 60 years and upwards.

The number of deaths registered in the entire of the Dublin Registration District during the week, represents an annual ratio of 26 in every 1,000 of the population by the census in 1861. In the suburban district of Rathmines the annual ratio was 23 per 1,000; in Donnybrook it was 11—the City of Dublin Hospital and the Hospital for Incurables are situated in this district; in Blackrock the rate was 15; and in Kingstown 9 deaths per 1,000 of the population by the Census in 1861.

Erratum.—Our attention has been called to an error in last issue, by which the estimated assessment per acre for the proposed Barrow Drainage was put down at £31 4s. 3d., whereas it should have been £3 14s. 3d.; our readers will easily understand that the figure 1 was accidentally shifted to "the left" after the proof had passed from the hands of the "reader."

BANKRUPTS.

William M Elwee, city and county of Londonderry, builder, to surrender on 29th September and 11th October.

TO CORRESPONDENTS.

To Subscribers.—Received: J. Richardson, Piltown; Jas. Henry, Belfast; M. O'Farrell, Roscommon (with thanks for good wishes); R. Walker, Jun, Cork; E. G. Martin, Cork; A. O. Lyons, Mallow; N. Haughey, Dundalk; J. Bermingham, Ballinasloe; J. H. Foley, London; E. Birchall, Leeds; M. Cavenagh, Tipperary; C. Lynn, Coleraine; A. Tate, Belfast; Young Men's Society, Cork; A. R. Pollock, Paisley; C. A. Gould, Westminster, London; W. Atkins, Cork; J. Bryan, Dunmanway.

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The Irish Builder.

Vol. XII.—No. 259.

Social Science, and what it Teaches.

THE Congress held at Newcastle-on-Tyne will be productive of benefits which may for a time be unseen, but are yet certain. The papers there read before the Association, and the discussions which have evolved from their reading and publicity, not only interest us, but add to our practical knowledge in many ways. Perhaps two of the most important matters discussed are those of Education and Health. Both of these are indispensable to our existence and usefulness upon the world. Without the former we are but half civilized; without the latter we only vegetate instead of live. The former enables us to be useful subjects—useful as individuals and useful in the aggregate as a society; still no amount of education, when misapplied to useful ends and purposes, is of the least use to us. Education, of course, implies knowledge, but it means more than mere rudimentary or scholastic lore. To make the man more manly, the woman more womanly, and the child more childlike, is a noble design morally considered; but the philosophy of education is not "cabbin'd, cribb'd, confin'd" within these elementary limits. When the child has learned to speak, he has acquired the groundwork of future practical usefulness; and when it has learned to read, a solid superstructure has been raised, on which any amount of worldly knowledge may be afterwards successfully built. Self culture and exertion after this can achieve untold wonders for the future man.

There are, however, many obstacles opposed to the progress of the boy and the perfection of the man. As a youth, he is dependent upon and amenable to his parents or guardians. His moulding is one of the duties dependent upon them; and if they fail, the future man may either live to be a drone or a drag upon society, a curse instead of a blessing upon the earth. If the parent fails from natural causes, or fails from inability or death, an excuse exists; but if he fails to do his duty to his children from wanton or wilful motives, on the State then devolves the duty of the public father. All predisposing causes to ignorance must be eradicated—stamped out as the germs of future pests. Education may not, nor does not, make men as a consequence honest, but the attainment places them on a better footing for becoming good, if by nature they are not radically bad. The educated and industrious workman is seldom bad. The individual who works hard for his living is generally, if not always, honest. Society is often the cause of outraging the individual man, as well as the crime of the individual outraging it. Therefore, good government is made to protect the person of the individual against the many frightful temptations and pitfalls of society, leading him to his destruction. This duly considered, the ends and aims of education can be foreseen and evils guarded against. Compulsory education, elementary and advanced, should be provided for all our youths, and its acquirement enforced; and we trust that by the labours of the Social Science Congress and social reforms at the Press the Government of these countries will pass such enactments in the future as will render it impossible for one child in the kingdom of sane mind to grow up in unlettered ignorance.

Important, however, as is Education, Health is equally important to the well-being of society. The progress of sanitary knowledge is of late years attracting universal attention, and deservedly so. What avail would be all our knowledge if our very lives were insecure? If each of us awoke each morning with the consciousness that we were living and breathing in a house under the very windows of which existed a number of fever sheds, how would we feel, and what would our sensations be under these circumstances? Would we not flee from the danger if we could? Yet, strange as it may seem, thousands of us in every part of Great Britain have been walking for years the very streets and alleys of our cities breathing deadly contagion. Many of us escape through miracles common to our humanity, and only known to a higher power, yet we scarcely wonder, or give it a thought, why we escape and live while hundreds of others as strong, as gay, and perhaps more thoughtful than ourselves are stricken down, and are heard of no more.

Education is a noble acquisition, but what is education after all if health exists not? The sickly and diseased child grows up into the pallid, pinched face, weak-limbed, and consumptive youth. He becomes a student, perhaps, and aspires to one of the learned professions; he studies hard and laboriously, but his constitution has been undermined by criminal neglect in his youth. This criminal neglect is not traceable to his parents, perhaps; but it is certain, however, to have an origin very often indeed traceable to sheer public neglect and want of proper sanitary precautions. It is by this neglect that the student is cut off in the prime of life, and not a few of his companions elsewhere in the kingdom. In our marts and mines, in our counting-houses and workshops, how many hundreds are there not of pale and hectic faces engaged in dragging themselves painfully through their day's labour. Alas! alas! it is heard in the suppressed sigh, and the gurgling cough, and palpitating heart, like unto that in Longfellow's "Psalm of Life"—

> "Beating funeral marches to the grave."

Without a well-guarded public health, and properly defined sanitary laws and local regulations, we cannot grow up either a good, moral, or physically robust population. Education will always be imperfect, and lose half of its value where disease and contagion are allowed to exist; and disease and contagion must exist where a badly housed and an uncleanly living people are located. Cleanliness must be enforced as well as education. Filth is criminal. Yea, it is suicidal! Suicidal in the individual who hugs it and wallows in it, and criminal otherwise, because it is an instrument in murdering the valuable lives of others. Public health can never properly exist until every house has a copious supply of pure water, until proper drains lead with a good gradient from each habitation into well constructed and well ventilated public sewers. Domestic cleanliness is of course indispensable, for individual neglect forms disastrous precedents, and leads to corporate and governmental neglect. Anyone who knew London a quarter of a century since, and who was absent from that city during this lapse of time, were he to go back now, would discern a great change for the better. A great sanitary revolution has taken place in the English metropolis since that time, but, at first sight, perhaps, this would not be at once seen. The working of this great revolution is going on still, but like other good works it is hid from our view. It is buried under men's feet, in the earth's bowels, but the fruits of this re-invigorating and recuperative spirit is observable in collapsed bills of mortality, and in rosier cheeks and brighter eyes. We do not mean to say that there are not big black spots and huge blotches on the face of London, or that she has not still some chronic cancers here and there upon her body. London is not a city by comparison, London is rather a continent, a huge conglomeration of cities. It is a city in bulk and expanse quite impossible for the foreigner or stranger to sight, grasp at, or see in detail. Another quarter of a century of sanitary progress, even if only at the same advance of the past, will achieve wonders in the interest of health and common humanity.

While on this subject, we would indeed be remiss in our duty did we not honourably acknowledge British indebtedness to the advocacy and teachings of the *Builder*, a journal which for five-and-twenty years has stood at the head of the architectural and building profession in London. This well-conducted publication has been, if not the first, has at least been the foremost and ablest exponent of sanitary and social improvement. It has led the way to numberless improvements, affecting not only its peculiar province, but all the cognate branches belonging thereto. The honour is the greater when we mention that during the last quarter of a century the journal we allude to has been under the editorial control of its present editor, Mr. George Godwin, F.R.S., one of the vice-presidents of the Social Congress in the Department of Health, which has just concluded its sittings in Newcastle-on-Tyne. As an architect, and an author of works on architecture and sanitary science, the editor of the *Builder* is well known in London, but he is not so well known in this city as his labours entitle him to. We have ourselves, we trust, been somewhat instrumental for the last eleven years in doing some good towards elevating the sanitary condition of Dublin, and we are never slow to take advice, nor do we feel humiliated in learning from strangers our shortcomings. Dublin cannot compare in ways and means to London, nor has she the advantages of the latter; still Dublin could do vastly more if our corporate authorities would only bestir themselves. Governments who do not do their duty to their country fall or are overturned. Reformation or revolution replaces them. Corporations must expect the same. They cannot be let exist as a drag on sanitary progress. Education moves apace—ignorance is skulking back into holes and corners. Health *versus* Disease is the great and all-absorbing action that is now pending, and we would mistrust the very existence of a Supreme Being were we to doubt the unanimous verdict of the world, and the certain triumph of Sanitary Science.

CONTRACTS, AND THEIR FULFILMENT.

Dispassionate persons, or those not in possession of actual experience of the working of these things, naturally suppose that when a set of drawings (where drawings are necessary) are proposed, and an exact specification drawn up, those tendering for the work ought to know so clearly what they are about as to leave no room for further trouble or misunderstanding between the employer and the contractor. Unfortunately, of late years this is by no means the case; and a specification, however closely and carefully drawn out, is yet a document of the most elastic description in the eyes of sharp practitioners, and so far from its being a means of preventing misunderstanding, it in too many instances is but a *casus belli* between inspector and contractor, save with a few firms whose character and reputation are beyond suspicion. The fierce competition existing in the present day, and the desire to do things cheaply rather than to do them well, is one cause for this. Very many contracts are taken now, subject nominally to the clauses of the specifications, but really in a hope on the part of the contractor, so strong as to amount almost to certainty, that the rules, although down in black and white, yet will not be too vigorously enforced, and the sole chance of profit often depends on the inclination of the inspector of the work to deal leniently with it, and to shut his eyes to sundry little shortcomings in the execution thereof.

On the whole, it must be supposed that the system works well or it would be improved, but nevertheless accidents do arise about the nature of which it is as well for all those concerned that too close inquiry should not be made. One of the distinguishing points of Brunel's character consisted in the manner of his dealing with contractors. So rigidly, indeed, did he tie them to the letter of their bond, that while on the one hand much difficulty was experienced to obtain tenders for the work on the Great Western, yet on the other that railway remains to this day, if not a model of cheapness, certainly a model of workmanship. Although a certain degree of elasticity must of necessity be admitted in the reading of a specification, yet it should be within narrow limits; if it goes beyond this it becomes licence, and such business transactions can no longer be considered either sound or legitimate. It cannot be legitimate trading when a man contracts for 5,000 tons of rails at a price 10 per cent. lower than the contractor can possibly deliver them, if inspection is honestly and rigorously carried out. Such contracts are, indeed, rarely or never entertained by any respectable firms. That such contracts are, however, daily and hourly taken and carried through is matter of fact, and now and then by some accident of fortune the tricks played in order to deceive the inspectors do come to light, when of course there is "trouble." We have heard of a large firm losing some thousands of pounds in consequence of a wet night. It was in a rail contract, and the testing machine was contrived with some ingenuity to deceive the inspecting engineer. The monkey ran between a pair of uprights, and these uprights were so drawn together at the bottom as to brake up the speed of the falling monkey, so that while apparently giving a stroke of such or such force it did not give 30 per cent. of it. In the case in point the night previous to the testing day was a wet one, the testing machine was not under cover, the wood of the uprights swelled so much as to arrest the monkey's fall so considerably that the inspector noticed it, the machine was examined, and when some of the rails were honestly tested they were found wanting, and the whole lot were thown on the contractor's hands.

A fruitful source of shortcoming in the matter of fulfilling contracts is to be found in the proneness of the contractor to take on himself to judge of the quality of work or material requisite to fulfil a given purpose. Thus, if bricks of certain quality are specified for a particular viaduct the contractor signs articles for a price which, if he acted to the letter of the bond, would leave him no profit, perhaps even entail loss. He knows this, but argues that such bricks are, in his experience or opinion, unnecessarily good; and while agreeing to put them in will really put ones of a worse quality, realising his profit from the saving thus effected. If the company for whom he is working are in difficulty about money matters he is pretty safe, because, as his drafts are not honoured up to time, the inspectors can scarcely do their duty rigorously, and find it expedient to wink at the shortcomings of the men to whom money is due but cannot be at once paid.

The staying of steam-boilers, the riveting of iron ships, are amongst the things in which scamping is frequently and rather extensively carried on; and if those voyaging to America or to Australia did but know how many lead rivets are between them and eternity, or the number of dabs of putty that do duty for rivet heads where rivets ought to be, they would hardly lie down in their berths at night so complacently as they usually do.

It may be asked how these matters are to be remedied. This is a question harder to answer than to ask. The provision against bad work or bad material lies, not in supervision but in fair prices, and if those having the letting of contracts persistently take the lowest tenders without duly considering the circumstances of the firm tendering, they must be prepared for inferior workmanship and defective material.—*Mechanic's Magazine.*

THE WORKMEN'S INTERNATIONAL EXHIBITION.

The Workmen's International Exhibition may be expected to close shortly. The committee for the last few weeks have been active in providing musical attractions, and, in consequence, they have brought a larger attendance of visitors, and have added more largely to their funds. The Irish section, Belfast and Dublin, has continued to command a good deal of notice, and we understand that some of our Belfast exhibitors, manufacturers in various departments, will, as soon as the exhibition closes, receive some large orders for goods. We hope and trust that it may be so. Gibson's Belfast bog oak ornaments, and Jacques' Dublin ones, have been freely praised and patronised; so has the different northern exhibitors of linens, sewed muslins, &c. Messrs. Simpson's Irish friezes will be found on more English backs than Mr. Gladstone's, and Dunville's Irish whiskey is certain to be found in more English cellars than formerly. In the North of England and Midland districts Belfast spinning looms will in future be no rarity; and as the Queen, the Countess Spencer, and Mrs. Gladstone, have led the way, and shown an example worthy of imitation, we are likely to find before long that Mr. M'Creery's Irish spinning wheels will wheel in many fashionable English homes.

We remarked on a former occasion that the handiwork of Irish hands was to be discovered among the exhibits of English and foreign firms. We might instance several examples. In the fine display of window cases, shop window appliances, and several ingenious contrivances of brackets and stands, exhibited by Mr. F. Sage, shop-front builder, of Grays Inn-road. Irish intellect, ingenuity, and skilled labour, has contributed much in the person of an Irishman, a native of Cork we believe. It would be tiresome, however, to cite numerous instances in cabinet work, jewellery, and mechanisms of various descriptions.

In conclusion we may say, however, that the interests of all the exhibitors from the beginning has been honestly attended to and guarded by the superintendent of the Irish section. The awards we hope will be fairly distributed, and that honour will be given where honour is due.

NOTES OF WORKS.

The extensive and much-required drainage works now in progress under the direction of Mr. M'Curdy in Trinity College, have been carried on very rapidly within the last five or six weeks; the wells are already beginning to feel the effects of the works, and it is fully expected that the water level will be lowered to such an extent that a most valuable change, in a sanitary point of view, will take place in the sundry buildings and grounds of the college. The pipes, which have all been specially made for these works, have the upper half of their circumference perforated. The main drain is 18 in. diameter, with branches of 15 in., 12 in., and 9 in. A spacious engine and boiler house have been designed, also a large reservoir and 20-horse power engine were intended for the pumping station at the lowest level, but the carrying out of the main drainage scheme of the city will lower the outfall sufficiently to obviate the necessity of having a pumping station. Messrs. Wardrop are the contractors. The works will cost about £4,000.

Messrs. M'Glashan and Gill, Upper Sackville-street, have just completed their extensive alterations and additions to their publishing warerooms. Mr. M'Curdy is the architect, and Mr. Hughes, contractor.

The new Primitive Wesleyan Methodist chapel and schools to be erected at Kingsland Park have fairly commenced. They will be Early English Gothic, simply and plainly treated. Mr. M'Curdy is the architect. and Messrs. Beckett the contractors.

Messrs. John Nolan and Son, Meredyth-place, are the contractors for erecting new offices for the Munster Bank on the sites of Nos. 8 and 9, Dame-street, and No. 6, Palace-street. Thomas N. Deane, Esq., F.R.I.B.A., is the architect. We wonder very much at the directors not taking the corner house belonging to Morrison, hatter, as with this addition their new bank would form a noteworthy architectural feature of the city. In a future number we will give an illustration and description of the building.

New farm buildings, stables, &c., are being erected for Thomas Gaffney, Esq., at St. Helen's, Malahide. Mr. D. J. Freeman, architect; Messrs. Conolly and Son, builders.

New and extensive wine and spirit premises have been erected at 15, Suffolk-street, for Messrs. Quinn, under the direction of Mr. Daniel J. Freeman, architect; Mr. Patrick Monks being the contractor.

A new billiard-room has been added to the European Hotel, Bolton-street, and several alterations and improvements effected thereto. Mr. D. J. Freeman was the architect.

St. Anne's parish church has been painted and decorated in neat and chaste style by Mr. James Gibson, Mary-street.

The re-opening of St. George's parish church will take place on tomorrow. Very extensive improvements have been made in its interior, the chief of which is the new and convenient arrangment of the pews.

The new church at Castlerock, Co. Antrim, has been consecrated by the Lord Bishop of Derry and Raphoe. A full description of this Church will be found in the Irish Builder for July 1st.

A new Roman Catholic Church is to be erected at Enniskean, Co. Cork.

The first stone of a new Roman Catholic Church at Fivemiletown was laid on Sunday last by the Most Rev. Dr. Donnelly, Bishop of Clogher. The site has been granted by Hugh De Fallenburg Mongomery, Esq., lord of the manor.

The first stone of a new Protestant church at Drumragh, Co. Derry, is to be laid on Saturday next, the 8th inst.

Mr. Daniel, of Mary-street, has undertaken the contract for supplying the town of Naas with gas.

SOCIAL SCIENCE CONGRESS, NEWCASTLE-ON-TYNE.

Apropos to our article on Social Science, we annex below a report of the speeches made at a meeting of the working men in the Newcastle-on-Tyne Town Hall, by Robert Rawlinson, C.B., C.E., President of the Health Department. We also give that of Mr. George Godwin, Vice-President, F.R.S., and editor of the *Builder*.

We may add here that some excellent papers were read in the Department of Health. That by Mr. Phillips Bevan, editor of the *Food Journal*, on "The Adulteration of Food and Drink," was an excellent one, and the discussion that it led to was most interesting. In all the departments, "Education," "Jurisprudence and the Amendment of the Laws," "Economy and Trade," able papers were read. We may in our next issue pass under review some of these connected with trade, in view of future legislation upon the subject.

Reverting to Mr. Godwin's remarks about the sanitary condition of the town of Newcastle-on-Tyne, we can bear him out in every particular. He has hardly spoken strong enough of the deplorable state of the low quarters of that commercially prosperous but sanitarily misgoverned northern capital.

We speak from personal knowledge ourselves and of repeated visits made to "Cannie Newcastle." It is to be hoped that the action of the Social Congress held during the last few days in the town, will wake up the civic authorities of Newcastle to look closer after the courts or "chares" as they are called in that town. Round about the Ouseburn quarter, along the quay side, and through the heart of the Sand Gate, there is at present and always has been, a plentiful supply of dirt, disease, and of course, absence of pure air. We make those remarks in justice, and in confirmation of the speakers whose remarks we append.

Mr. George Godwin, after a few prefatory remarks, said :—

I have given a great deal of attention to sanitary matters in one way or another for a great many years; and if I should offer any objection to what I have seen in your town, it will be done in the kindest possible manner, and without any intention of giving offence. There still exists very great ignorance in the matter of public health—an ignorance, I might say, in all classes, though, for my own part, I scarcely recognise classes—I say there is great ignorance in all persons of the community upon this matter. They fancy, for example, that they know about air. If you begin to talk about it to a body of men, such as I see here, they say, "Oh, we know all about that:" but, unhappily, the great majority of them act as if they knew nothing about it. The past talks of "trifles light as air," but air itself is no trifle, that is quite certain. If you could but estimate the amount of mischief done by this ignorance of air. it would be so stupendous that it would astound you. Some persons have a notion that the only means of comfort is to shut up every hole in a room, and prevent the access of air. It is God Almighty's arrangement to give an unlimited quantity of air, and it seemed to be man's arrangement to endeavour to limit that supply, and to deteriorate its purity in every way in his power. I recollect the story of an old clergyman who used to complain greatly of his flock for shutting out the air, and he once said, "If I were to preach in a barrel, they would stop up the bunghole." That is just what the majority of us do. I have been in houses—I have been in some to-day—where the top sash is nailed up—a suicidal act—doing such damage as one could scarcely tell of in the ten minutes that have been allotted to me. Now, people won't drink dirty water—not willingly, though sometimes they are obliged, even in Newcastle—but they have no objection whatever to take in dirty air. And if they would but remember that from dirt comes death,—if they would but remember that absurd saying that "own dirt is no dirt," if they would but see the absurdity, the dangerous absurdity of that saying, I am sure they would think very differently. From our own breath may come our own death. It has been shown pretty conclusively that about 700 cubic feet—say 10 ft. by 10ft., and 7ft. high, and we can all imagine a room of that sort—is about as small as a single individual should inhabit. I have been into houses in this town where six people were sleeping in that same area; and, therefore, having 120 cubic feet, or something of that sort each, instead of 700. Many of these evils come from want of thought, and they might be guarded against even by the people themselves, although I must confess that men in a somewhat lower position than one's-self are often placed in great difficulties. The increase of population in Newcastle, for example, has been much greater relatively than the increase of houses, and overcrowding, which means all sorts of dangers, all sorts of miseries, and all sorts of crime and death, is still prevailing in many parts of Newcastle to a very great extent. I saw a ward in an hospital where every patient died who was put into it. I know a stable in which no horse will live beyond a certain number of months; I know houses in London where successive families are stricken down by fever as they go in, all of which might be prevented by a little knowledge. I ventured at a meeting yesterday to speak of the sewage of Newcastle; and I am afraid that I a little annoyed some of the excellent authorities of your town. I do not venture to complain in the least of anything they have done; I simply say that a vast deal needs doing in Newcastle. I believe that for some time past a great deal has been done by your excellent town surveyor, Mr. Fulton, and by the Corporation; but if any member of that Corporation thinks that this town is well sewered, that it is well provided with water, that proper arrangements have been made for the recreation of the children, then he is labouring under a great mistake, and I am sure the Corporation ought to be obliged to any stranger, who, with a fresh eye, shall show that to them. Now, if I were not afraid—I am almost afraid, but if I were not I would tell of two or three things that I saw yesterday afternoon in this town. I have walked through some of the chares and some of the courts in Newcastle, and I must confess that in many parts of them there exist things of which I thoroughly believe our excellent chairman cannot be aware. For example, I went into Rosemary-court, I believe it is called—I must forget there are ladies present to-night, it is no use being squeamish—and I found that there were seventeen houses dependent upon one miserable wretched hole for convenience. A poor woman, well dressed, and of most respectable appearance for her position, lamented to me the condition of the place, and her description of it was truly painful. I might dilate upon it, I might speak of other courts leading out of Market-street, and other courts even quite close to the Town Hall, and to the best parts of the town, all of which require supervision when it can be obtained. I do not say it can all be done at once. I know it cannot be; but let it be remembered that it is needed; let it be remembered that you do want a proper outlet for your sewage. But, if possible, it should not be wasted but applied to the land, where it would be productive; we should put back to the earth that which we are plainly taking from it. Now you see the badness of parts of your town is quite evident. If you happen to live in St. Andrew's you have a fourth chance more of life than you have if you live in All Saint's—that is to say, for every 29 persons who die in All Saint's, there are only about 24 persons who die in St. Andrew's. Now, say that five persons in a thousand die because of bad arrangements—and I should say that a great many were dying even in St. Andrew's from bad arrangements; but take the worst as compared with the best, and what does the death of five persons in this town (a town of 130,000 inhabitants) imply? It means that there are 600 persons living at the end of the year who would otherwise have been dead, or, in other words, that 600 persons live because they happen to dwell in All Saints' rather than in St. Andrew's. Points of this sort if got into the mind, will show the necessity and value of all sanitary movements and improvements, putting about a provision of fresh air, good water, and pure food. If you were to hang two or three trades that adulterated it would be well. I would do it without scruple. There are a number of other things upon which I might touch if time permitted. There are those houses which are back to back. I have been in a couple of hundred of them to-day. This state of things cannot be helped at present, I know, but in Heaven's name get rid of them as soon as you can. It is impossible to be lively, or healthy, or happy in a house without an opening at the back, without water, and with four times the number of people living in them that ought to be there; indeed, under such a state of things it is scarcely possible to be virtuous. I had a sore throat yesterday evening simply through passing for a couple hours through these places, which produce on the inhabitants a depression of spirits, a general degradation of health, no power of doing good, and no power of exertion. Just compare the condition of a man in a healthy house, surrounded with pure air and a happy wife, and that of a man living in a house of a different sort, having bad air, bad smells, and necessarily a grumbling wife—a wife that cannot be clean, for, as one said to me, "It is no use being clean, for dirt comes again directly." However, there were many houses I saw which could be called little better than charnel houses. I know the Corporation are aware of it; they go on gradually improving in these matters, and they want and must have your co-operation, because, for effecting the objects desired, it is necessary to make rates, and in this way they must have great co-operation—and that not only in the aggregate, but individually, in your own houses, very much can be done if you get knowledge on these sanitary points. I saw an enormous number of courts unpaved to-day; get these places paved, for an immense deal may be done by paving. It is a serious thing to have these courts unpaved; it does not mean comfortable walking, but bad air, stagnation, and, in fact, everything that is bad. These may be considered small things in themselves, but they touch upon the happiness and prosperity of families, and these are by no means small things, and therefore perhaps you will pardon me for the ten minutes I have occupied in pressing upon you the great importance of sanitary knowledge.

Mr. Rawlinson, C.B. (President of the Health Section), said:—I suppose I am called upon to address this vast assembly of working men because I can claim the privilege of having sprung from the same stock as the men I see before me, and I have imagined that from my past knowledge and experience I may, in the limited time afforded to me, be enabled to say something of use, something of advice, probably something of warning, something of encouragement. I am old enough to remember working men for 50 years. It is 50 years since my acquaintance first began with the working men of this country. I don't know that I am competent at this moment to judge with accuracy of the feelings and the conditions of the vast mass of the working men I see before me, but it may probably both instruct you, and in some respects amuse you, if I tell you what was attempted to be inculcated in my mind when I was a youth of ten years of age. It was, as far as my experience went, the common conversation among working men that the cleverest man was a good drinker, and a good fuddler. All operatives connected with the building trade at that time were connected with drink and degradation. When the foundation stone was laid, it was celebrated by drinking; when the first floor was put on, it was celebrated by drinking; when the roof tree was reared, there was another bout of drinking. If a workman removed from one place to another he must pay his footing, and there was a celebration by drinking. Now, I sincerely hope that such customs are of the past, and not of the present. They were of the present in my day and generation, and if practice and precept could have made me a drunken man, I should have been dead long ago of drinking and sottishness. But something in my nature rebelled against it. I don't take credit to myself that I resisted, because I believe that I was constitutionally unfitted to be a drunkard, for if I was tempted into any excess of an evening, I paid the fearful penalty of a sick headache next morning. You have been told that it is necessary to the prosperity of the working man that he should be educated. I tell you so too. My friend Professor Lyon Playfair has described to you the process the State is about to adopt to give to all your children means of a better education, and let me appeal to you as fathers of families, and I am exceedingly sorry that when you came here to-night you did not bring your wives with you, because I think it is just as necessary that the wife should hear all these arguments as it is that the husband should hear them. If every man has to hold his position in the world, and especially to raise himself in the world, he must do it with the assistance of that helpmeet that God has given him, who must live with him, work with him, strive with him from the beginning to the end. Of what avail will your schools be—of what avail will all this teaching be, if it stops when the school-door is shut?—if you don't in your own homes follow out that education given to you in the school, and perseveringly strive to make more of it—if you don't take the talent entrusted to you, and so work it that the five talents shall be ten talents, and that at the end of life the Great Master may say to you, "Well done, good and faithful servant, enter into thy reward." Every working man's home, as Mr. Godwin has told you, should be so improved that it can be his comfortable residence—his castle, and in time of sickness his hospital. I don't think it is a creditable state of things that charity should so supplement that condition of the working man, that when sickness overtakes him he is necessarily put with an aggregation of human beings in the same state of misery. When civilisation has fulfilled its mission, and when statesmen have learned the full lesson of their duty, and when governments so regulate and so order the laws, I hope that if we don't see it our children or children's children will see it—that every man can have a roof over him; can have room-space about him, and comforts within himself; he shall not need to go externally either to the dramshop or the beershop to get out of the court in which he has to dwell, or on washing days to get rid of the smell of the soap suds, to spend his earnings selfishly and improperly in debasing himself, degrading his wife, and beggaring his children. The great Lord Brougham, whom I have had the pleasure on several occasions of seeing in the place of your chairman at this great meeting, who, so long as life was spared him, never missed an opportunity in connection with this institution, which he founded, of presiding over such meetings as this—Lord Brougham compared society to the Egyptian pyramid, that emblem of stability. The lower courses the great masses of the people; the intermediate course, rising up to the apex, the intermediate grades of society, crowned by the king or president, as the case may be. Now, it is quite clear that the stability of the pyramid, in spite of its form, would be nothing if the lower courses were not sound and stable; and society most certainly at the present time and in this country, and as far as I have studied the question in other countries, is not in that stable position, because the welfare of the working man has up to this time from the first beginning of history been grossly neglected. It must be that men will begin to wish for that stability, for there is no state in society can be safe and stable if the foundation be not sound, good, pure, and true. In a remarkable speech made by that great statesman, philanthropist, and speaker, John Bright, at Birmingham, he used this faithful and remarkable simile—he said that when the Atlantic telegraph was lost in mid-ocean, and when it was thought to be hopelessly lost, the iron grappling hand of science was lowered over above 2,000 fathoms deep—where the pressure was 5,000 lbs. to the square inch—that it successfully grappled the cable and brought up the line of communication which bound the two worlds in one, and he said he thought it was time to consider if the human hand of statesmanship could not be lowered down to the depths of our civil degradation to grapple with the amount of misery and destitution that pervaded society. I sincerely hope this society's meetings will enable us to come to right conclusions, and enable us to advise the legislature to enact wise laws, and any little teachings laid before you will send you home — for that is the bottom of it all—that you individually, each man for himself, shall study the question, and strive how much better he can make himself, how much more comfortable he can make his home, and how much happier he can make his wife and children.

ACCIDENT TO A FEMALE ANTIQARIAN.

An inquest was held a few days ago, before Mr. Hugh Martin, coroner, and a respectable jury, at Kells, county Meath, on the body of Mrs. Eliza Sheridan, wife of Mr. John Sheridan, timber merchant, Dublin, who met her death under the following circumstances:—It appeared from the evidence of her husband that both had left Dublin on an excursion to the Co. Meath. Having arrived at Kells, the deceased expressed a desire to explore the famous stone house of Columkille, so called from the tradition prevailing that the missionary named had made the place his residence. Having entered below from the doorway, the visitor finds himself in a single-vaulted apartment 24 feet in height, and in the roof is an aperture of narrow dimensions, and which leads to the first storey of the building. A ladder, unprotected by handrail, communicates with this opening, which leads to two apartments, always visited by antiquaries who have the temerity to ascend the ladder. The deceased expressed a desire to ascend, and, despite the advice of her husband and other visitors, could not be dissuaded from her purpose. Accordingly, the husband accompanied her to the summit, and both having arrived on the landing, she requested that they should return. The husband preceded her downwards advising her to be cautious. He had hardly expressed the words when, melancholy to relate, the deceased missed her foot, and went headlong to the ground floor, two young parties below having a narrow escape. She lived, according to the evidence, only three or four minutes. It was proved that deceased was sober at the time of the occurrence. A verdict of accidental death was returned, with a recommendation that the Town Commissioners of Kells, or those in charge of the stone house of Columbkille, should see to having the ladder protected on each side with boarding and handrails, and that a trap-door should also be placed at the opening in roof.

HIGH ALTAR, LISPOOL CHURCH, COUNTY KERRY.

The subject of our illustration with this number is a High Altar which has just been executed by Mr. John Scannell, of Union-quay, Cork, for the Very Rev. Daniel O'Sullivan, P.P., V.G., and now being erected in the Catholic Church of Lispool, Co. Kerry. Cork marbles and Caen stone are the materials employed, which produce an excellent effect. The sculpture is executed in a masterly style, and the subjects chosen very appropriate—"The Good Shepherd" being the central figure, the emblems of the Four Evangelists, and the Vine and Wheat, suitably placed. The Reredos shows, in three panels, the "Fall" and the "Redemption;" that on the left representing the Expulsion of our First Parents from the earthly paradise, and in the corresponding bay the Annunciation—the Crucifixion occupying the centre. This portion has been designed by Mr. O'Neill, Cork.

CORRESPONDENCE.

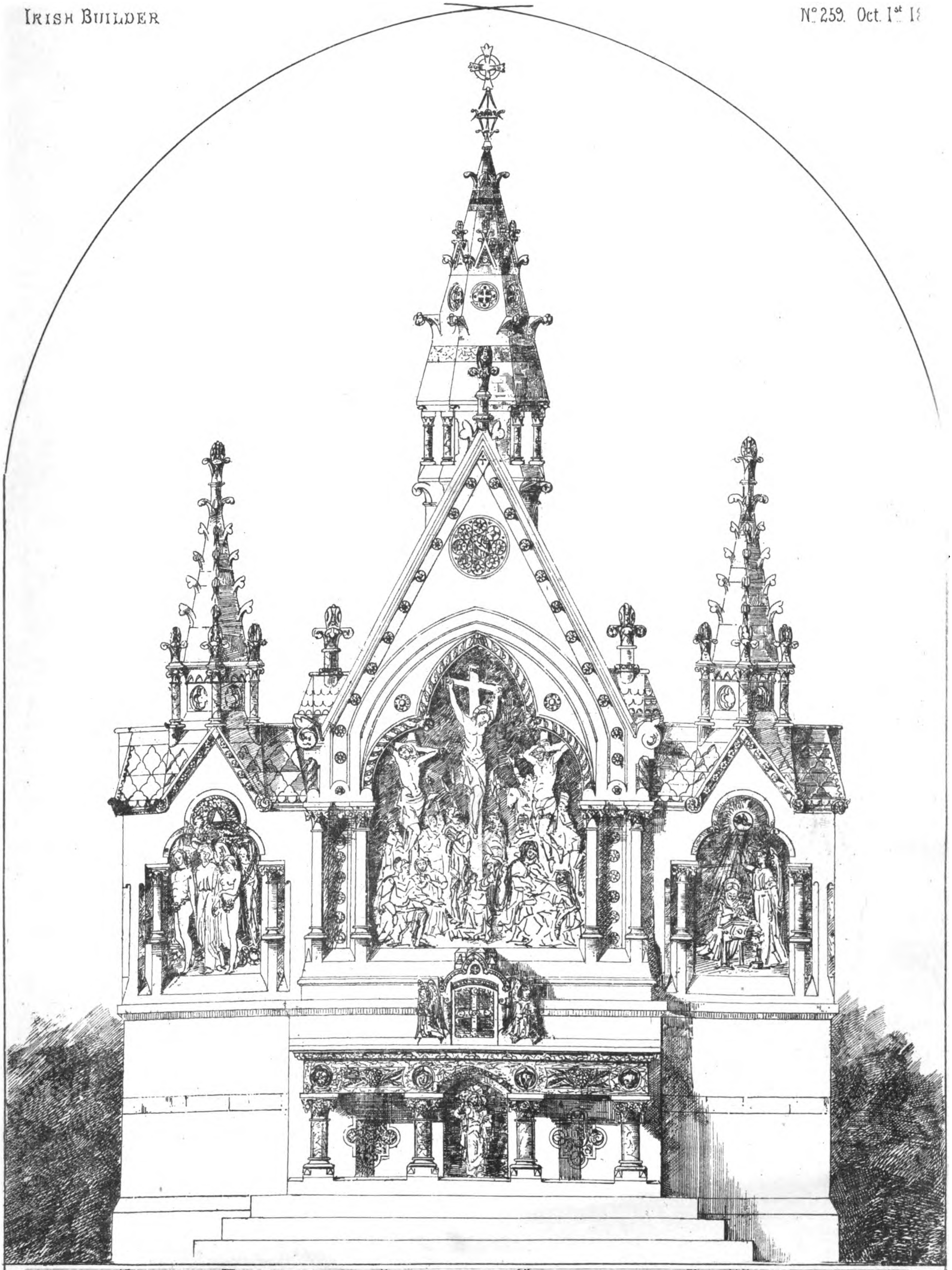
[*It is to be distinctly understood that although we give place to letters of correspondents, we do not subscribe* editorially *to the opinions or statements set forth in same.*]

THE ROUND TOWERS AND CROSSES OF IRELAND.

TO THE EDITOR OF THE IRISH BUILDER.

Though time hath spoiled thee, with despotic will,
Clondalkin Tower,—there is beauty still;
Beauty sits smiling round the ruined stone,
Despite of all the spoiler yet hath done.

Sir,—Having proved in my last letter the immigration of the Phœnicians, and their claims to be considered as the colonisers of this country, who first introduced Baal worship and erected the round towers of Ireland, I now beg leave to call attention to some very important facts substantiative of the Eastern connection. The monumental evidence, names of places, and customs still adhered to, are in themselves sufficient to settle the question. We find in scripture that Divine vengeance was breathed against the false prophets, and considering that they were the great transgressors against the Mosaic law, and perpetrated abominations in those high places, which caused them to be uprooted by Divine decree out of the land of Canaan (Deut. xii. 2, 3), it would be difficult for Mr. Waring to find similar towers in those Canaanitish provinces where the decimating hand of vengeance overthrew the high places, and erased every vestige of them "out of that place." Nevertheless, throughout other portions of the East innumerable evidences abound, proving that pillar and high place are synonymous, and that the monumental remains there receive the strongest confirmation from those in Ireland as to the Phœnician associations of the two countries. About 400 B.C. the Fomhoraice—supposed to have been the first Phœnicians who fled from the iconoclastic Israelites—plundered our southern coast, and settled in Monaghan under the command of the Mahonies, or MacMahons. These MacMahons exercised powerful sway over the island, and by deeds of valour subjugated a vast portion of it under their rule. The great continental struggle at present waging brings into prominence one whose name and fame suggest the genealogical query—Is Marshal MacMahon a descendant of those Phœnician invaders whose prowess in arms was as unequalled as their knowledge of architecture, even to the present day, is undisputed? One thing is certain, that the prefix "Mac" is a distinguishing mark of Phœnician origin, and that MacCarthy, MacMurrough, MacMahon, in their septic associations, were identified with the regal and chieftainry supremacy of the earliest Phœnician colonists. So that in proper personal names, as well as those of places, the link is unbroken. The Phœnicians introduced into Ireland the same idolatrous worship that predominated under their rule in the East. They consecrated woods and groves to Baal and Asheroth. Some have supposed that Asharah, Astoroth, or Ashroth, meant the places dedicated to their worship, but Josephus proves that he was a deity, or false god; an image which Manasses, the erecter of high places (or towers) in Jerusalem, set up, and which Josias, the good king, caused to be destroyed. The Baal and Astaroth of scripture represented the sun and moon, or earth. When the Philistines beat the Israelites they deposited the arms of Saul in the temple of Astarte. Now, the Palestines, or Philistines, migrated from Egypt, and were the greatest enemies the children of Israel had to contend with, and they erected high places which were "an abomination to the Lord." They held the greater portion of the country on the skirts of the Mediterranean until Judas Maccabeus subdued them 159 B.C. Mark the analogy in Ireland. The Phœnicians named their towers here after their idols. The little tower in the County Donegal, near the river Erne, called Astroth; Ardstrath, or Ardstra, in the County Antrim; and Aterit in the County Galway—all derivable from Astaroth, and evidently dedicated to her. This Astarte had the head of a bull, the ensign of royalty, which represented by the horns the moon's curvature. The Egyptians worshipped Isis, who was also invested with a pair of horns. The most ancient city built by the Phœnicians near the *pillars* of Hercules was called after this deity. Under Phœnician *regime* the warriors hung up their armour in the temples. We have a precedent of the same custom still adhered to in Ireland —the Knights of St. Patrick having their armour hung up in the stalls of our national cathedral. It is recorded in Jeremiah that the Baalists made cakes for Astarte, the queen of heaven. On the Baalist festivals, at the present day, in Scotland the old tradition is adhered to, on which occasions cakes are baked by the superstitious Caledonians, and cast about the people. Dr. Adam Clarke gives a description of St. Paul's cross, at Munster Boyce, in which he states that "in the under side of the left transverse beam of this cross there is the representation of a human hand with a cake of bread on it." An old crony explained it to him as symbolic of "an ungodly woman baking bread on the Sabbath, the cake stuck to her hand as a judgment from God for the breach of his holy day." The amazing harmony between the devices on those old crosses, and the faithful record as given in the 10th to 13th chapters of Ezekiel is remarkable. They are stone parables, interpreting more lucidly than even history can explicate, the existence of Phœnician rule in Ireland. In this prophetic vision in Ezekiel (B.C. 600) the cherubims are represented thus:—Every one had four faces: the first was the face of a cherub —see what a beautiful face is shown on the face of Diana's tower (*Vide* Keane's "Temples"), and the various devices on the panels of Cashel of eagles and vultures. In this vision the heads on each side point to the four cardinal points. In O'Neill's magnificent work on the "Round Towers," which gives greater insight into the mythological connection than all the works written on the subject, he states, speaking of Devenish tower, the aspect of the doorway is north-east. North-east? Why, the north was the place of sacrifice; the east where the Baalist god (the sun) arose. In Ezekiel the four wheels "went upon their four sides; they turned not as they went, but to the place whither the head looked they followed." The head on the bands on the four sides of this tower—facing the cardinal points—is remarkable. The first was the face of a cherub; the second of a man; the third of a lion; the fourth of an eagle (Ezekiel chap. 10). This vision was by the river Chebar, in the land of the Chaldeans. The monumental proof is apparent, and shows how truthfully, as Dr. Keith remarks, prophecy has been fulfilled in the true and false systems of religion which the human race have followed. We



HIGH ALTAR + LISPOOL CHURCH + Co. KERRY.

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have the Sphynx, a nondescript kind of animal, partly a virgin (Virgo), and partly a lion; from the overflow of the Nile taking place between these two signs of the zodiac, the Egyptians made this figure and worshipped it. Again, the winged bull of Nineveh has the head of a man, and part of the face of a bull, and wings; this, doubtless, symbolized the prophet, the sacrifice, and the flight out of Egypt. The figures of a winged eagle and a beast; the winged ox and winged lion on the panels of the ornaments at Cashel, and the cross at Kilkenny with the serpents over it; these examined in the light of scripture and Phœnician history, establish fully the real origin, design and polity of the buildings and peoples who erected them; proving that Baal was the universal god of the heathen; and that in Albion as well as in Ireland he stood upon an high pillar, as half a man, with a face full of rays of light, and a flaming wheel on his breast. Only in Erinn more enduring temples were erected for his worship, tapering to the clouds, and reaching nearer to the divinity they adored. On many of the crosses, and connected with the towers, are to be seen figures of vultures, hawks, eagles, and birds of prey. Now, when the Israelites slew the Baalists in battle, they ordered their bodies to be left for the vultures to consume them. Strange, 3,000 years later—to-day—there are towers in the East, with iron bars across, on which dead bodies are left for the vultures and other carnivorous birds to prey upon. These interesting facts all tend to show the Eastern associations, and lead to the conclusion that the high places of Baal and the round towers of Ireland are identical, being one in design, object, and purpose; and that the Babylonians, Chaldeans, Egyptians, Persians, Phœnicians, and nearly all the Eastern nations, practised sun worship; and after spreading over "Asia and Africa, Greece and Rome, through all ancient Gaul, and into Britain and Ireland," promulgated Sidonian ethics, and erected high places to conduct the Baalism, which was afterwards abolished by the sublime rites and ceremonies of Christian truth, when the despised cross, no longer used to display the abominations of those apostate sculptors, reared its head over all contending factions, and compelled kings, and chiefs, and priests, to bend in homage beneath its glorious influence, and acknowledge that "Baal's dark reign is o'er." These few facts will, I am sure, convince Mr. Waring that the Phœnicians had more to do with our country than he imagines, when he endeavours to ignore the Carthaginian structures which still exist in our island as evidences of the power they wielded over these countries when beneath the iron yoke of their bondage. I shall (D.V.) in my next trace the Grecian and Roman connection, and show how it accords in elucidating the historic argument.—I remain, yours obediently,

Caleb Palmer.

Ashbrook, Raheny, September 28, 1870.

> . . . . . . Once the seat
> Of Baal's prophets and dark religious pomp:
> There many an antique monument is found
> Illegible and faithless to its charge;
> That, deep insculped, once held, in measured phrase,
> The mighty deeds of those who sleep below:
> Of hero, sage, or saint, whose pious hands
> Those ponderous masses raised—forgotten now—
> They and their monuments alike repose.

TRAMWAY BETWEEN WARRENPOINT AND ROSTREVOR.

In reference to this project the *Newry Telegraph* has the following in a recent issue:—

A letter appears in our columns to-day from the proprietors of cars which ply between Warrenpoint and Rostrevor, relative to meetings of railway managers and men of business which have been held as to the construction of a tramway between these towns. While we have every disposition to sympathise with the car proprietors, so far as their interests are really in danger, we are bound to consider the matter in the broad light of the public interest. The main objection which is made to the tramway scheme is that which underlies all practical advances in accordance with scientific principles. Weaving by steam has injured hand-loom weavers. Railways have injured proprietors of mail and stage coaches. But parties connected with flax-dressing, spinning and weaving, or with stage coaches, have not been injured as much as they feared. Master flax-dressers have become flax-buyers for mills, guards and coachmen have become station-masters. In various ways men are obliged to accommodate themselves to the spirit and state of the times. It is probable that the car proprietors will not be as much injured as they suppose by the proposed tramway if carried out. Some of the special arguments, indeed, which they use are entitled to consideration. That the road from Warrenpoint to Rostrevor is narrow, and that, therefore, a tramway on it would be dangerous to life and property, are pleas which come under the head of public interest. Whatever tramway may be made, there must still be a road to accommodate the public. The very name of the railway between Newry and Warrenpoint implies that it was intended to continue it to Rostrevor. Yet a road from Newry to Warrenpoint is still necessary, and numerous cars ply upon it. As the car proprietors observe, private cars would still require a road of proper width, even if the proprietors of cars for hire had no interests at stake. We do not agree with the car proprietors when they ascribe motives to the promoters of the tramway scheme. It is rather hard to say—and perhaps the statements might be found not to have sufficient foundation—that the sole object of the railway managers and business men is to make money, to take the living from the carmen, and to break down the car traffic. It so happens that the making of money is a necessary element in many public undertakings; but commercial men, while promoting their own interests, have often as much public spirit as any other class in the community. If it were not so, even regard to self-interest would defeat its own object. If the tramway, or any other project, was not calculated to promote the public interest, it would not pay. We hope that the scheme objected to will be decided in the light of public interest alone, with as little damage to private interests as possible.

MONSTER HOTEL, NEW YORK.

On the 25th of August the doors of the Grand Central Hotel, situate on Broadway and facing Bond-street, New York, were thrown open for the first time. This immense hotel will accommodate 1,500 guests in its 650 rooms. Over 35,000 square feet are the superficial area of each floor, and the top floor surface dimensions of the interior amount to 350,000 square feet. There are two courts in the centre, 20 ft. wide by 160, affording light and ventilation. These courts are bridged by the main hall on each floor. Fire-hose is conveniently located on every floor, while two large tanks, each holding 10,000 gallons of water, are situate on the top of the hotel. There are five staircases, two elevators, and scuttles to the roof. There are four entrances on Broadway, and two on Mercer-street. The building is heated by 30 miles of steam coil. The price of board for transient customers is 8 dols. to 3.50 dols. and 4 dols. per day, according to location of room, while permanent boarders are allowed a considerable reduction from these rates. In the statistics of the hotel we find the number of bricks, 4,000,000; cost of building and ground, 1,500,000 dols.; cost of furnishing, 500,000 dols.; water supply in tanks (in gallons) 20,000; number of chairs, 5,000; number of doors, 2,000; depth between Broadway and Mercer, 200 ft.; height to top of flagstaff, 197 ft.; length on Broadway, 175 ft.; number of halls, 50; carriages, 15; ceilings, average height, 12 ft.; number of stories, 10; acres of carpeting, 7; steam-engines, 3; elevators, 2; acre of marble tiling, 1.

LAW NOTES.

WHAT IS A "BROKER?"

At the Northern Divisional Court, before Mr. O'Donel, on the 17th ultimo, a knotty point was presented to the gentlemen of the long robe for preliminary solution (?). Pursuant to the provisions of two Acts of Parliament, the Corporation of Dublin sought to recover penalties from several dealers in "old clo's," &c., they not being duly licensed as "brokers."

The first case was against Nicholas King, and set forth that "not being a pawnbroker duly licensed, and not carrying on the business of a ship chandler, or the business of a rope-maker, and not dealing only occasionally in marine stores, did, on the 7th of September, 1870, and at other times, carry on the business of a broker in the house, 72 Mary's-lane, within the municipal boundary of the borough of Dublin, without having therefor a licence."

Mr. Gamble, Q.C., and Mr. Gerrard, instructed by Mr. Fitzgerald, appeared for the Corporation. Mr. Purcell, Q.C., and Mr. J. O. Byrne, instructed by Mr. Rynd, were for defendant. Mr. Carton, instructed by Mr. Larkin, appeared on behalf Mr. Bury, T.C., who had also been summoned; and Mr. Ennis represented a number of other persons who had been summoned by the Corporation as "brokers," to pay the licence duty.

Mr. Gamble, in opening the proceedings, said that as a public protection against allowing pawn-offices to become receptacles for lost and stolen property, the Legislature had enacted that the owners of such establishments should among other things, obtain a licence for carrying on this business, and keep a book in which everything received should be entered, as well as the particulars connected therewith. The consequence was that much valuable property was often recovered and easily traced, which would otherwise never be heard of, But marine store dealers kept concerns not always of so high a character, and inasmuch as this might afford improper persons a certain amount of facility in getting rid of ill-gotten property, it was enacted by the 12th and 13th Vic., cap. 97, and again by the 27th and 28th Vic., cap. 23, that every broker and dealer in marine stores must hold a licence for the purpose, and the duty on such licence was fixed at 20s. each year. King was a second-hand clothes broker.

Mr. O'Donel—The summons does not state what kind of broker. Is a stockbroker liable?

Mr. Gamble continued:—The act of 1849 said that under the title marine store dealer shall be included all brokers except pawnbrokers, and it provided that every broker, &c., must be licensed, must keep a memorandum of all his transactions, have his name in distinct letters over his door, and notify at once every change of residence; and for neglect of those rules he became subject to a penalty of £20, together with £5 per day after. There were, however, in section 23 of the Amendment Act exceptions to these provisions—namely, ship chandlers, and rope-makers, and those dealing only occasionally in marine stores.

Mr. O'Donel—I feel some difficulty about this: the act of 1849 is a public Act, but that of 1864 is a local one.

Counsel said that nothing further was necessary to constitute the offence than to prove that the defendant was a broker, and the act empowered the Corporation to recover the penalty; and although it was true that from 1864 up to the present these people had been overlooked, yet that had nothing to say to the matter. Moreover, the brokers could not plead that they had been taken unawares, for last July notices had been served on them to procure licences or bear the consequences.

Mr. O'Donel—It is by the act of 1864 they would be now liable, and that is a local act.

Mr. Gamble proceeded to define the meaning of the word "broker," as "one who buys second-hand goods for the purpose of selling them again." He would not say, however, that this exhausted the comprehension of the term, for the goods need not necessarily be second-hand. It might, however, include more—namely, a class of persons who sell on commission. He would, accordingly, extend his definition thus—"One who receives goods from another, and sells them on commission." Referring to the "Law Dictionary," he found broker to be "One who makes bargains in money or merchandise." Now, take, "Thom's Almanac" (laughter), where the parties he was proceeding against were described as "brokers," and, in fact, to settle the matter, they had the word over their doors. Counsel then read the act detailing the amount of penalty, and asked the court for the infliction of a fine.

The Magistrate said that he could not carry out an indefinite act, for, to follow up Mr. Gamble's argument would at once lead to a *reductio ad absurdum*. It would include stockbrokers, and such establishments as that, for example, of Messrs, Waterhouse, Dame-street—which would be absurd. In fact, half the respectable business houses in the city would, under this view, become *dealers in marine stores!*

Mr. Purcell, Q.C., on the part of the defendant, said his client would admit he was a seller of old and new clothes, buying them in pawns, and going to England for them, but he denied that this made him a marine dealer or broker. The question was a purely legal one, where everything turned on the meaning of a single word. As he understood the word, it only meant dealers in old iron, old chains, old keys, bits of copper, lead, brass, old ropes, junks, &c. Indeed, the Corporation had for five years been putting exactly the same interpretation upon it by compelling, for the purpose of detecting crime, every one keeping such a place to retain a memorandum of their dealings and to comply with all the proper regulations. Now, take up the Merchant Shipping Act of 1854, and there a marine store dealer was one dealing in old sails, old ropes, old anchors, old chains, &c., and all the precautions as to having the name in six-inch letters and so forth were precisely the same as those for marine dealers under the Dublin act. The act of 1864 was only a patch up of deficiencies in the act of 1849, and the other side were insisting that a dealer in old furniture was a broker. Holt's definition of a broker was (Russell's "Treatise on Factors and Brokers")—"An agent employed by another, one who contracts in the name of a principal." Again, in the last edition of the "Law Dictionary" (1864) a broker was "one who makes bargains between others for compensation," not a man who sells for himself, A broker might buy and sell, an auctioneer can sell only. Well, look into the best English lexicons they had—Webster's and Richardson's—and in the former a broker was "a negociator for merchants," and in the latter "one who acts between buyer and seller." But there was still another authority which would help them to what the word meant. In Holt, there was given a copy of a bond into which London brokers must enter (6th Anne), and there a broker was not one in any business, not one who deals as a principal, but only one who acts between two parties as an intermediary, not making profit on the article, but on the amount obtained.

Mr. O'Donel—I think the Bank might be considered a broker in that sense too.

Mr. Purcell, Q.C.—Furthermore he understood that there was a notice of motion by a member of the Corporation standing for Tuesday next with the object of rescinding this resolution of a previous meeting. He was sure Mr. O'Donel would be fully satisfied before making a rule which would compel most of the respectable traders in Dublin to put up "Marine Dealer" over their doors. The aim of the act was to keep supervision over a certain class, and his client was neither a broker nor a dealer in marine stores. In fine he must protest against this attempt to impose a fresh tax upon the already overtaxed citizens of Dublin.

Mr. Byrne said that after the arguments of his friend Mr. Purcell, it was unnecessary for him to enter very minutely into the matter, but there was just one other reference that he would wish to make. In "Milford *v.* Hughes," a "broker" was determined to be "one who makes bargains between merchants for a fee, and not one who buys and sells for his own profit."

Mr. Gamble rose to reply, and said the Corporation had, in keeping a look over such cases, a duty to exercise for the protection of the public, and the only question was, had they also the right? He maintained that they had, but these people tried to obstruct them, and he could not well see upon what grounds (even after the innumerable definitions of his learned friends), seeing that the men called themselves brokers, and had the word over their doors and in the Directory. No doubt the word at first meant people dealing in old things belonging to ships, but like nearly every other word in the language, it had, by the usages of society, gradually lost its original signification, and was now conventionally employed in a sense different and enlarged.

Mr. O'Donel, in giving judgment said, that after the admirable manner in which the case had been argued upon both sides, the only thing for him to do was to endeavour to find out the honest legal interpretation of the word about which they had already heard so much. The whole difficulty arose out of the expression "marine stores." These had their origin purely in connexion with ship matters—old sails, ropes, and so on, and it was entirely for the protection of shipping interests (lest sailors or others might dispose of tackle), that they were made to have a licence and keep a memorandum. But their business widened, and to old chains and rails they added old brass, old ropes, and all the rest of their modern wares. Now, does the act refer to the original or to the modern meaning? The words "ship-chandler" and "rope-maker" in the act threw a light on the meaning of the expression "marine stores dealer." It was an act seeking provision against fraud in relation to dealers in all kinds of old metals, and here assuredly, the reference was to marine dealers, in the conventional sense of what marine shops now were. It would seem that there were two trades—one in metals and one in marine stores, and hence it appeared that the legal meaning of "marine stores" was not the conventional but the original meaning—*i.e.*, that referring to shipping affairs. He must, therefore, dismiss the summons against the furniture and clothes dealers, for these trades were different both from the limited and unlimited sense of the word. Even the Act of '49, although it defined many terms which were plain enough before it, left marine stores untouched; but it said:—"It shall include brokers." Now, they must get the meaning of the word broker. Every court was at liberty to put an interpretation upon an Act of Parliament, and the meanings of "broker" had been clearly given by Mr. Purcell that it was easy to see that the defendant in the present case was no broker, and therefore he must be let off on this ground too, for it would be absurd to put upon the words the unlimited meaning which would include some of the most respectable men in this city. The other horn of the dilemma—giving it the limited sense—was equally vicious, for then the law seemed to become a respecter of persons, overlooking one and punishing another. Where was the line to be drawn? The 48th of George III., in regard to stolen property, enacted (although it had never been acted upon) that all dealers in old metals—gold and silver excepted—should attend to certain provisions, which confirmed him in the view he had already taken of the meaning to be put upon the word, and he should therefore dismiss the case.

Mr. Gamble applied for leave to produce evidence, with the purpose of preparing a case for submission to the Queen's Bench, and, after some discussion, Mr. O'Donel consented to hear the evidence.

Mr. Purcell said that he would now withdraw any admissions he had made, and would compel the prosecutors to establish their case in every particular.

Mr. C. Winter, superintendent of brokers' licenses, was then put forward, and proved service of the Corporation notices.

He was cross-examined at considerable length by Mr. Purcell as to the means he adopted to obtain evidence against the parties. He said he sent one man to sell an old shirt, and he afterwards sent another man to buy it. The sum got for the article was 2s., the sum paid back for it 3s. 6d., and 10s. to the middleman.

Mr. Purcell—You employed a man as broker for you, although he had no licence? —I did.

Mr. Purcell—Now, sir, was not that a trap? —I do not know what you mean by trap.

Mr. Purcell—Do you swear here that you do not know the meaning of the word trap? —I would not call it a trap; it was a means of obtaining evidence.

Mr. Purcell—Are you to bear the expenses? —I am not.

Mr. Purcell—Did you dispose of any other old clothes?—Yes; an old waistcoat.

Mr. Henry proved the appointment of Mr. Winter, and the men employed by the latter proved the buying and selling, but could not say in whose houses the transactions occurred.

Counsel stated that they should give all the opposition they could to the prosecution, and require them to prove the cases *seriatim*.

Mr. O'Donel remarked that this would be only prolonging the inquiry, without gaining anything.

Ultimately a general dismiss was granted, with three guineas costs in King's case.

THE CASTLE OF ARMAGH.

The history of this old structure is almost buried in obscurity. Dr. Reeves says that the castle which gave name to Castle-street was a building unknown to early times and the Annalists, and, therefore, never enters into its description. All Colgan's notices of Armagh are translated by him from the Irish of the Four Masters, where the reader will find the original passages at the dates respectively which he assigns.

Under the year 1074, Stuart, in his "Memoirs of Armagh," quoting from Colgan, vol. 2, p. 298, states, "that on the Thursday after the Festival of SS. Philip and James, Armagh was wasted with fire. The castle (*arx*) and the churches, with the bells, were destroyed. The city was again re-built; but in the year 1091, the castle from its middle part (what does this mean?) towards the west, was materially injured with fire."

In translating the passage from Colgan, Stuart has evidently given a false interpretation to the word *arx*, which, according to the best authorities, means a high place or "Rath." Dr. Reeves says—"Wherever Colgan uses the word *arx*, he represents by it the Irish term *Rath*. The summit of the hill now occupied by the cathedral yard and houses on the same level, was anciently called *The Rath Arda-Macha*, or *Rath of Armagh*—and was exclusively devoted to churches and other religious buildings. It was Colgan's *arx*, having been the enclosed or fortified precincts of Daire's premises, before they were granted by him to St. Patrick. The outside belt of ground, all down the slopes to the low ground, was subdivided into wards or districts, called the *Trians* (or, literally, *thirds*), which was the Irish term for what we express for quarter."

The original passages in the Four Masters, run as follow, and from them it will be found that the word *arx* taken with *ex media parte* (middle part), and *cum suis ecclesiis* (all the churches) cannot mean a castle or building which was not larger than that erected about the same time by King John at Carlingford and other places.

A.D. 1020—"Ardmach tota incendio vastata usque ad arcem majorem."—A.D. 1074—"Ardmach tota cum omnibus ecclesiis et campanis cum arce et reliqua urbis parte incendio vastata." A.D. 1092—"Arx Ardmachana cum suis ecclesiis, &c., incendio vastantur," and at 1112—"Arx Ardmach cum templis"—*i.e.*, the Rath (not castle) with all its churches, &c.

We have, moreover, no evidence to show that even so far back as the year 1020, the state of the ancient city was such as to require the erection of a fortress like the castle: and it is more than probable it owes its origin to the troublesome times in the North of Ireland, subsequent to the invasion of Ireland in 1172, and the conquest of Ulster some years after. In pursuing this idea we find that in 1179 John De Courcey—the castellator of Ireland—plundered Armagh, and William Fitz Aldhelm carried off the staff of Jesus. Again, in the year 1184, Philip of Worcester, then Governor of Ireland, proceeded on a circuit with a great military force, to visit the British garrisons stationed through the provinces. At the head of this army he entered Armagh, which he handed over to the tender mercies of his merciless soldiers, who robbed the churches; and amongst the plunder there appears to have been a certain "large cauldron or brewing pan," which was taken from the clergy of the city.

In 1210 King John landed with a great and well-appointed army at Waterford. Shortly after we find English colonies interspersed over the whole face of the country, and castles erected through Ulster to protect their interests. Money was coined, and an attested copy of the great English Charter was transmitted to this country.

We come now to the period at which we determine the erection of the Castle of Armagh. The Marquis of Kildare, in his book of "The Earls of Kildare," published in 1864, states from Lodge's Peerage. vol. 1., p. 60, that "Maurice Fitzgerald, second Baron of Offaly, in the year 1236, built the Castle of Armagh, of which there are no remains." Lodge, who in general is considered a good authority, unfortunately gives no reference for this statement; but the disturbed condition of society, which at that time agitated the North of Ireland, would naturally lead us to infer that he is tolerably correct. At the period to which Dr. Lodge assigns the building of the Castle of Armagh, the English influence and power had gained much ground in Ireland, for the King directed his writ to the Archbishop of Armagh and the other Prelates of Ireland, in which he decrees that his writs of common law shall run into Ireland as well as England, and be equally efficacious in both countries.

We may then place the origin of this castle, subject to correction, at the year 1236, from which time its existence seems to have been almost entirely ignored in local history. Sir Henry Sidney, in 1575, gives a woeful description of this fortress:—"The towne is miserable; the forte imperfecte, not worthe the chardge of the keepinge, if there be peaceable proceadinge. The bridge and gate to garde is not half reared; but I have taken order it shall be finished, and very necessary, it is to be kept if peaceable proceadinge be extended."

In the year 1596, we find that Hugh O'Neill, Earl of Tyrone, suddenly marched to Armagh, cut off the fortress from communication with the other garrisons, and succeeded in forcing it to surrender before Sir John Norris could arrive to its relief. At the beginning of the present century, part of the premises were tenanted by the Rev. Dr. Burns, and at a later period by Robert O'Neill a sheriff's officer. It was subsequently permitted to go to ruins, and the late John Ross occupied the premises by building on its site several dwelling-houses, adjoining a lane called after the owner. The property has since fallen into the hands of Wm. B. Kaye, Esq., who has taken care to preserve a piece of grouted mason work—the only remnant of this ancient fortress to be seen at the present day.—*Cor. of Belfast News-Letter.*

WORKING MEN'S INSTITUTE AND TEMPERANCE HALL, BELFAST.

The Workmen's International Exhibition now open in London has just received an addition to its valuable contents. It is a model in oak of the Working Men's Institute and Temperance Hall, which is now being erected in Belfast. In its issue of Saturday last, the *Exhibition Chronicle* (a journal published in the Agricultural Hall, Islington) writes in praise of the work produced by Mr. Robert Simms:—"We must not omit mention of Mr. Robert Simms, of Durham-street, Belfast, who contributes a splendid model of the Institute and Temperance Hall now being built in the city wherein the exhibitor resides. It is made to a scale of half-an-inch to a foot, and is constructed in oak, secretly dovetailed; no joints are perceptible. The model is built in three sections, and each floor can be lifted and the internal arrangements exposed to view. It is perfect in construction, and is a splendid specimen of detailed manufacture, and an exhibit which must command considerably more than passing observation. Mr. A. T. Jackson, the architect, who prepared the original design, is entitled to respect for the production of a work pre-eminent in architectural beauty. Taken as a whole, hardly a better specimen of work can be found in any branch than Mr. Simms's beautiful model."

CRAIGS CHURCH, CO. ANTRIM.

The parish church of Craigs, Co. Antrim, was re-opened on the 22nd ult., after undergoing considerable alterations and improvements. The additions comprise, on the north side, a transept 22 ft. x 16 ft., and, on the south side, a transept 22 ft. x 18 ft.; also a side aisle and porch. These open into the old church with two pointed arches on the north side, and three on the south side, resting on cut-stone columns with moulded capitals. The irregularity of the plan, dictated by the space available for building on, is not unpleasing in effect, and so managed that any want of uniformity does not for a moment suggest itself. The arches are well proportioned, and add much to the architectural effect; and a still further improvement of importance has been effected by simply removing the old plaster ceiling and sheeting the rafters with pine timber, stained and varnished. The new roofs are also open-timbered, stained and varnished. The style of the old church, so far as it had any pretensions to style, being of the pseudo-Gothic in vogue thirty years ago, and of a poor description, has not been followed in the additions, which are designed with high-pitched roofs, and are of a substantial character. The details are simple in character, and follow, in some measure, the type of early Church architecture prevailing in the same district of the country from the 12th till the 14th century, of which some examples remain in the ruined churches at Kells, Ballywillan, &c. The transepts are lighted with coupled lancets and vesica-shaped windows. The pews are open, and stained and varnished, the old pews have been cut down and brought into conformity with the new ones. These improvements have been carried out from designs by Mr. Thomas Drew, F.R.I.A.I., Diocesan Architect, by Mr. John Thompson, of Belfast, builder. The cost was about £1,300. The heating will be effected by a hot-water apparatus. £550 of the cost has been contributed by the Ecclesiastical Commissioners, and the remainder by the landowners of the parish and other friends.

WATER ITEMS.

Holywood.—The Town Commissioners of Holywood, Co. Down, have selected the plan furnished by Mr. William T. Henry, C.E., for the supplying of their town with water. He proposes to form a reservoir at the junction of the Moss and Ballykeel streams for an extent of 726 feet, giving an area of 3a. 3r. 16p. under water, at an average depth of 20 feet, calculated to give 20 gallons per head per diem, for over 170 days, to a population of 5,000 inhabitants. The level of reservoir above flagstaff in High street is 315 feet, so that the highest houses in the town can be supplied. The reservoir will be formed by making an embankment across the valley, of an average depth of 13 feet, and a small embankment at the junction of the Moss and Ballykeel streams, supplied with a "by-wash" and "sluice" to turn off the impure water during the "flax period" into the storm channels, also "storm, flood," and water not required for storage. In front of the embankment is to be a filter pond, divided by a wall into two equal parts, each containing a separate filter. The extent of this pond is sufficient to contain over three days' supply, being 66 ft. x 99 ft. x 10 ft. The expense of watering the streets by hydrants and jets Mr. Henry calculates would be about £27 10s. per annum, allowing each jet to command an area of 2,200 square yards. His estimate for the works (including purchase of land and distribution through the streets) is about £4,000. In concluding his report, furnished to the Town Commissioners in July, Mr. Henry says—"My aim has been throughout to give the largest possible supply for the most advantageous outlay. In this report it must be borne in mind I have taken the water as it appeared to me; but, before constructing any reservoir, I would advise an analysis to be made, if it has not been done already, which will enable the Commissioners to arrive at a fair conclusion as regards the quality of the water."

Enniskillen.—Enniskillen is to be provided with a water supply. The Earl of Enniskillen, lord of the soil, has contributed £500. The town boundary is to be considerably extended, and gas supplied to the added portions.

DUBLIN "HAVEN," AS DESCRIBED IN 1726.

The following is extracted from a work entitled "A Natural History of Ireland, by several hands," published in 1726 by George Grierson at the Two Bibles in Essex-street in this city:—

Dublin haven hath a bar in the mouth, upon which at high flood and spring tide there is fifteen and eighteen feet of water, but at the ebbe and nep tide but six. With an ordinary tide you cannot go to the key of Dublin with a ship that draws five feet of water, but with a spring tide you may go up with ships that draw seven and eight feet. Those that go deeper cannot go nearer Dublin than the Ringsend, a place three miles distant from the bar, and one from Dublin. This haven almost all over falleth dry with the ebbe, as well below Ringsend as above it, so as you may go dry foot round about the ships which lye at an anchor there, except in two places, one at the north side, half way betwixt Dublin and the bar, and the other at the south side not far from it. In these two little creeks (whereof the one is called the pool of Clantarf, and the other Poolbeg) it never falleth dry, but the ships which ride at an anchor remain ever afloat; because at low water you have nine or ten feet of water there. This haven, besides its shallowness, hath yet another great incommodity, that the ships have hardly any shelter there for any winds, not only such as come out of the sea, but also those which come off from the land, especially out of the south-west; so as with a great south west storm the ships run great hazards to be carried away from their anchors, and driven into the sea; which more than once hath come to pass, and particularly in the beginning of November, *An.* 1637, when in one night ten or twelve barks had that misfortune befaln them, of the most part whereof never no news had been heard since.

FOOD ADULTERATION.

Amongst the subjects discussed at the recent meeting of the Social Science Congress the one of most practical interest to the community was the adulteration of food. This concerns all classes throughout the kingdom, but especially the poor; and it is strange that, while so much attention is properly bestowed upon other matters of sanitary importance, this has been so much neglected. We now and then, it is true, hear of proceedings being taken against some vendor of meat or milk, and we are then reminded that there is a public officer whose duty it is, when required to do so, to test the articles of food which are exposed for sale, and to report the fact if the ingredients be unsound. This, however, is but skimming very lightly the surface of the evil, which is widespread and deep-seated. Mr. Bevan, the editor of the *Food Journal*, called the attention of the Congress to the defects of the system, and gave some rather startling suggestions as to the nature of the adulterations which are practised. In the ruinous competition of trade unscrupulous dealers are tempted to cheapen the commodities which they sell by mixing with them ingredients of a disgusting and deleterious kind. Persons of limited means, to whom a small price seems the great *desideratum*, and who are ignorant of the practices resorted to, buy the odious compound without suspicion, and so the health of the nation is undermined, and fraud encouraged by the ignorant confidence of the public and the apathy of the authorities. If the traders were obliged to disclose the component parts of the villainous stuff which they palm off upon their customers, the temptation of cheapness would fail, and the poorest person would turn away in loathing and indignation. He strongly advocates the necessity of not merely giving the fullest notice to the buyer, but exercising a strict surveillance over certain traders, and, in short, organizing a complete system for the detection and punishment of fraud. Adulteration enters into every article of daily food, and under the loose and desultory system—if, indeed, it can be called a system at all—which now prevails, the poor are absolutely without protection. He recommends that there should be formed a Food Department, under the control of the Privy Council, with a staff of inspectors, who should visit the various traders and analyse the ingredients of the articles which are offered for sale, and on the discovery of fraudulent mixtures subject the vendor to a stringent code of penalties, consisting of fines, exposure of the offender by public notice inserted in the newspapers at his expense, and, if those punishments did not deter him from repeating the offence, imprisonment for a month, with hard labour. Such a code may be thought severe, but the evil is so serious that stern measures of repression are required, and public health and morals demand the infliction of exemplary penalties.

A TRADES' HALL FOR DUBLIN.

The usual weekly meeting of the council of the United Trades' Association was held on Monday evening, in the boardroom, Mechanics' Institute, Lower Abbey-street. Mr. George Clare, president, took the chair at nine o'clock. Mr. P. J. Shanley said it afforded him much pleasure to renew an important subject which was mooted by him when president of the association some six years since, and which had subsequently received the anxious and earnest attention of the officers and council, namely—a trades' hall. No greater want could be felt than that of sufficient accommodation for trades' meetings and friendly society purposes in Dublin; and the result was that, with a few exceptions, the various large and important trades and friendly societies were buffeted about, subject to the whim and caprice of landlords who on any quarterly or weekly night, might summarily eject them. It was a calumny on the working classes to say that they preferred meeting in public houses;—necessity drove them to the place where sufficient accommodation could be had for their meetings. He asserted, without fear of contradiction, that, for a beginning, a central hall, where suitable committee rooms, reading rooms, lecture rooms, bath and refreshment rooms were provided, would be hailed with satisfaction. He begged to move, "That a committee be appointed from this council to draw up a draft report as to the best means of erecting a public hall in Dublin for trades' and friendly society purposes, and that such committee present their report within one month from this time, with a view of bringing the matter before the general meeting of the association about to be held." Mr. William Browne seconded the resolution. The resolution was carried, and a committee appointed.

THE BLACKSTAFF.

DEDICATED (WITHOUT PERMISSION) TO THE BELFAST TOWN COUNCIL.

Thou filthy Stygian brook,
  Flowing on to a filthy sea,
I can no longer 'bide the look,
  Nor stand the smell of thee.

Like the stream of the Pagan dead
  You wriggle, and stink, and flow;
"*Facilis descensus averne*," said
  Old Virgil long ago.

And east and south and north,
  Wherever a zephyr blows,
Your horrible stench comes sailing forth
  To my sinful suffering nose.

You are neither black nor brown,
  You are neither green nor gray;
O river of hell! in a Christian town
  Plague-spreading night and day!

O mixture of cats and dogs,
  And mill dregs tumbled in,
And hens defunct and measled hogs,
  And immature waifs of sin!

By hovel and poor man's cot
  You wind with your fetid breath;
And your waters, factory-fed and hot,
  Are the breeding den of death.

And the men who have made you so,
  To the rich man's suburbs flee;
And build their homes where the breezes blow,
  And the air is fresh and free.

And they have their evening pranks,
  And make their music play;
But the poor who dwell by the river's banks,
  Alas! have the piper to pay.

For "the sinew and bone" of the town
  Are dying like dogs in a ditch—
In their huddled homes are smitten down
  By the griping greed of the rich,

Who have poisoned the stream for wealth,
  They have made it reek for pay:
I ween they are bound to see to the health
  Of the suffering town to-day.

The men who have made the slime,
  That is sickening me and you,
Are bound to pay for the brick and lime
  That will bury it out of view.

By brook and fountain spout,
  Where God's own sunbeams shine,
The man whose flax has sickened the trout
  Is the man who pays the fine.

And here, in the huddled town,
  The men whose factories pour
Their reeking waters seaward down
  Are the men who should bridge them o'er.

Oh! owner of wheel and screw,
  That whistle and whirr and spin,
Are rivers made for nought but you
  To tumble your hot filth in?

Shall fishes be kept by a grasp
  That knows not low nor high?
And shall Christian men be left to gasp,
  Plague smit, and sicken and die?

Oh! cholera, fierce and grim!
  O'er the east wind fell and fleet,
I hear the wings of your cherubim,
  And the tread of your blighting feet.

Nay, pity, and pass and spare
  The houses of the suffering poor,
But stop and make your ghastly lair
  At the great mill-owner's door.

I do not wish him killed,
  But scared for a week or two,
And bottles of doctors' medicine spilled
  On him as well as the poor.

And soon they will bridge the drains,
  And roof the fetid air,
When it smites some big Town Councillor's
    "weans."
  Or his Majesty the Mayor!

Then strike a tax, per poll,
  On the owner of wheel and loom,
And the stream no more shall reek and roll
  Like the sluggish wave of Doom.

With a Doctor for our Mayor,
  And surgeons in every street,
We yet contrive to poison the air
  Which God had made so sweet.

O pious and dirty race,
  Whose sewers with filth run broad,
Bridge o'er your drains, and chatter less
  About sickness sent from God!

J. L. R., in *Northern Whig.*

MISCELLANEOUS.

A Monster Fly-wheel.—There arrived at West Hartlepool, on Tuesday afternoon, a monster fly-wheel, intended for the rolling mills of Messrs. Richardson and Sons. This gigantic piece of casting was executed at the Norton Ironworks, near Stockton, by Messrs. Barrett and Co. It measures 22½ ft. in diameter, and 17 in. by 13 in. thickness of rim, and weighs 25 tons 5 cwt. In order to transfer it to West Hartlepool (a thing impossible to attempt on the railway), a special carriage, weighing 7 tons, had to be built for its conveyance, besides some chains, of about four tons, were employed, making with the wheel, a total of 37 tons; and to move this no less than 32 horses were used. Although the distance was about eleven miles, it occupied nearly three days in coming. This arose from the steepness of the road, and from the fact that a cottage had to be pulled down, and a toll gate removed on the line of route to allow it to pass.

A Parisian hotel-keeper has published the following announcement:—"To English travellers desirous of assisting at the siege of Paris, comfortable apartments can be provided, completely sheltered from shells."

Belfast Government School of Art.—All the arrangements for the new School of Art in Belfast are progressing rapidly. A portion of the north wing of the Royal Academical Institution is being fitted up under the new school-master. The school is to contain a sculpture gallery, and a library of valuable works on art. The students will be entitled to compete for scholarships, &c.

A Memorial Fountain in Wexford.—Mrs. Danbury, daughter of the late General Browne, of Carrigbyrne, proposes to erect at her own expense a public fountain to the memory of her lamented father in the town of Wexford, if the corporation would grant her a site. On the matter being laid before the Council, they unamiously accepted the kind offer of Mrs. Danbury, and promised to give the most eligible site in the town for the purpose. General Browne served under Sir Ralph Abercrombie, and previous to his death erected a handsome obelisk to his memory of Sir Ralph on Carrigbyrne Hill.

The author of "Legendary Fictions of the Irish Celts" has a new work on an equally promising subject, in the press. Mr. Kennedy names his forthcoming volume "The Fireside Stories of Ireland."

Whitworth Scholarships for 1870.—The award of the ten Whitworth Scholarships of £100 each for the year 1870, has just been made to the undermentioned candidates. To those examined as students—William Garnett, 19 years of age, student, London; James Taylor, 21 years of age, mechanic, Oldham; J. A. Griffiths, 22 years of age, engineer student, Middleton; H. W. M'Cann, 17 years of age, student, Liverpool; J. Perry, 20 years of age, engineer, Belfast. To those examined as workmen—Edward Tomkins, 24 years of age, engineer and draughtsman, Manchester; Frank Salter, 22 years of age, mechanical engineer, Leamington; William S. Hall, 25 years of age, engineering draughtsman, Nottingham; Henry Dyer, 21 years of age, mechanical engineer, Glasgow.

A novelty in photographs is promised us, pictures visible only in the dark—portraits that must be taken into the coal cellar to be admired. There are certain compounds of phosphorus which, after a short exposure to light, retain a certain amount of luminosity for days and even weeks afterwards. The image from the photographer's lens is allowed to fall upon a plate covered with one of these preparations; the light excites the surface to phosphorescence wherever it falls; the shadows of the image produce no effect. When the plate is removed from the camera and brought to the light nothing is visible upon it; but if carried into utter darkness the picture developes itself with an unearthly glow, as if it had been drown with the point of a lucifer match. Curious; but *cui bono*?

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Technical Education and the Workman.

JUST now the subject of Technical Education is fairly before the country, and it rests with the friends of the working classes and the people in general to avail themselves of the opportunity, and take action thereon. The new Education Act gives facilities to all who are interested, to provide means for the future education of our children, whether intended for industrial employments or for more ambitious, though not more useful, professions. The education of our future workmen to that standard which will render it impossible for them to be either incompetent or unskilled, except through radical personal vices or faults, is of the utmost importance to the well-being of society. To the artizans of the building trades a technical knowledge of the principles of their different forms of labour is most indispensable. The theory and practice of construction, the strength of materials, the qualities of various woods—their applicability to the purposes intended, their strain-thrust bearing powers in different situations,—a proper knowledge of all these matters are absolutely necessary both to the mechanic and building employer alike. Yet how many of our building journeymen workmen can be found in the workshop with this knowledge? Very few, indeed. Until every carpenter, mason, plasterer, painter, stone-carver, bricklayer, and other regular operative engaged in building knows more of his business than his present foreman, he cannot be said to be making more than a slow approach to the standard of practical information which is required of him. Every workman engaged in building should be able to act as a foreman if required. No foreman can be considered a competent one that does not thoroughly understand all architects' plans and drawings, and be able to make from them working drawings to scale. He should be able to draw and lay down plans of alterations himself if needed, and he should have a good knowledge of geometry, and know how to apply it correctly in the carrying out of the work he has to superintend or perform. But what is necessary for the foreman to absolutely know, is also as absolutely necessary on the part of every workman in the workshop, at the bench, or in the building, when left to himself, if the case happens.

Architecture will never assume its proper elevation or dignity as an art or a profession until every building workman has a technical and, in consequence, a scientific education commensurate with the pursuit of that trade which he follows, and which has its foundation in science, which makes it an art. Art involves workmanship, and perfect workmanship is based on science—science unerring and demonstrable. Our workmen, unfortunately, and not from causes of their own, have, with but few exceptions, been poorly educated. A primary or elementary education many of them had, but it went a short way, indeed, in making them practical workmen. Long practice and experience had to compensate for the want of technical knowledge, and the power to apply it in enabling them to overcome a difficulty when it presented itself.

Badly executed work reflects discredit both on the employer and workman, and seriously reacts to the injury of the architect. The most pleasing design and "thought out" construction in detail is certain to suffer in the hands of workmen who are obliged to work by rule of thumb, and who are unable to see with an educated eye the defects that are sure to grow and assume shape under hands that merely perform service according to like fashion and example. The workman who can only work in the same rut that his comrade has worked before him, and is so susceptible of an offence when directed in a better manner by better judges than himself—such a man is behind the time. Every workman ought to be willing to improve his knowledge, and equally willing to avail himself of the most correct, easy, and practical method for performing his work. Time, labour, material, and money, as a consequence, are saved by having a technical and practical knowledge of one's trade. Disgrace and want of employment is the necessary sequence of incompetency.

Every workman who possesses a spark of honest pride would shudder at the thought of being considered a "botch," and yet how many botches, pure and unadulterated, are not in our midst? There is scarcely one workman, however—though he may be conscious that he is not a first-rate mechanic, compared with others,—can bring himself to believe that he is an unmistakable and patent botch. Perhaps it is by a wise provision of Providence that a real "botch" never can bring the hated epithet home to himself. We fear if "botches" were certain of the *bonâ fides*, there would be more suicides in the world; and however calamitous might be the result, it is quite certain that a public benefit would accrue. The death of a botch no more than the death of a sinner is to be desired, whatever the good; better that both should live and repent.

When compulsory education has made headway in these countries, and when another generation of workmen have grown up to men's estate, then it will be time to bring the incompetent operative to judgment. In twenty-five years hence, when we may suppose technical education amongst our workmen will have developed itself, and will receive its due and direct application, good results ought to be apparent. Better, more intelligent, more skilled, and general gifted and handed workmen may be expected to be spread over the three kingdoms. As a natural result, a more intellectual as well as practical race of builders and employers of labour will spring up. Strange as it may seem, the influence of bad and inferior foremen has been altogether overlooked. In not a few of our building workshops at present, bad foremen exercise a most evil sway, to the injury of their employers and fellow workmen. A bad system prevails in many places, where incompetency is favoured and protected for a petty advantage, and competency is looked upon with disfavour, and marked for cowardly annoyance.

An ignorant overseer, manager, or foreman always is in dread that he will be supplanted if a more skilled and intelligent workman is in the same employ as himself; he therefore manages to keep a class of workmen under him on a par with himself, or so attuned to his wishes, as to become dependent on him, instead if being dependent on their own capacity for their employment. This rotten system ought to be shamed out, or rather stamped out of trade; and it behoves all honest employers of skilled labour, that they should know their men, and not be exactly dependent on the *ipse dixit* of any self-interested foreman for their character or abilities. When every workman in the workshop or building is on a par in the matter of ability, or near it, there will be less underhand work practised to the injury of a brother man. Technical knowledge will be the great auxiliary for filling our workshops with a better class of artificers, and it will cut the ground from under the feet of pompous shallowness in power and authority, and bring it to its proper level by a deserved dismissal.

Our sympathies are with the skilled and industrious workmen, but anything we have written or may write, will be as it has been, impartial to both interests, the employer and the workman. We deisre to see a better class and much larger one of skilled operatives in our workshops, and a more considerate and enlightened body of employers. We care not to adduce exceptions, for our object is, the public and national welfare, and not a narrow object which could be made pass muster through a particular groove. Education is no longer a monopoly; the mechanic's child as well as the minister's may soon march to school together, though their road in after life may diverge; the poor man's child as well as the peer's will in future have knowledge within his grasp—in fact, the former will have it thrust upon him, so to speak. If the State does the duty that is marked out for it, and if public boards rigidly perform theirs, fathers and mothers will no longer be branded with the disgrace of having ignorant children. Industrial employment will be pursued with profit, and will possess that dignity that by right attaches to them, to the honour of the workman.

THE "ROYAL" HISTORICAL AND ARCHÆOLOGICAL ASSOCIATION OF IRELAND.

This Association held its October meeting on Wednesday, 5th inst., at Butler House, Kilkenny,

J. H. Bracken, Esq., C.I., in the chair.

The following were elected as members:—J. O'Meara, Esq., Parsonstown; Miss H. Darley, Dublin; Mr. R. Grant, Edinburgh; Rev. D. Mulcahy, R.C.C., Dublin; William R. Jackson, Esq., Newtownards; Edmond F. Browne, Esq., Enniskillen; Henry J. Stokes, Esq., Negatapam, Madras; Rev. A. Cameron, Glasgow; W. A. Day, Esq., London; R. J. Roche, Esq., Adamstown; Ralph Hinks Lett, Esq., Enniscorthy; Patrick O'Rourke, Esq., M.D., Enniscorthy; E. J. Purcell, Esq., New Ross; Rev. J. S. Cooper, Enniscorthy; Rev. S. Donovan, Horetown; Very Rev. P. D. O'Regan, P.P., V.G., Kanturk; Rev. James O'Sullivan, P.P., Blackrock, Cork; E. S. Robertson, Esq., A.B., Bengal Civil Service; J. G. MacCarthy, St. Luke's, Cork. James B. Farrell, Esq., C.E., Wexford, was elected to a Fellowship, on paying the fees.

The following suggestion from Mr. W. A. Mahony, hon. local secretary for the Enniscorthy district, was brought under the consideration of the meeting:—

"As regards promoting the objects of the association, I would suggest the following:—That neatly-engraved or printed cards about 14 in. by 12 in. with perhaps a view of Monasterboice or Clonmacnoise, be struck off, stating the names of the association, its officers. objects, and general utility, with the terms of subscription, &c., and at foot a space left blank for the name of the local hon. secretary and the town where he may reside, to whom application to be admitted to membership may be made. On each hon. secretary being supplied with a number of such cards, he could have them placed in reading-rooms, young men's associations, mechanics' institutes, &c., and we will thus bring before every large body the name and objects of our association, and create in the minds of many a desire to serve a society which should be widely estimated by all who take an interest in the history and antiquities of Ireland. I would also suggest that a list of the members of the association should be supplied to the hon. secretaries, who could thus at once perceive who were not members, and bring before them the advantages of the association."

Mr. Mahony's suggestion received the approbation of the meeting, and the arrangements for carrying it out were left to the hon. secretaries.

The secretary called attention to the appeal of Sir William R. Wilde, through the press, for subscriptions towards a fund to prevent further desecration at Roscommon Abbey, and to repair that interesting ruin and the O'Conor Tomb; as also to the movement of the Rev. R. Richey, Ardmore, to rebuild, by subscription, the conical portion of the summit of Ardmore Tower—at present in a very perilous state,—using the original stone for the purpose. Both were heartily approved of by the meeting, as the restorations proposed were in safe hands with the two gentlemen named.

PRESENTATIONS.

A number of books, chiefly the publications of kindred societies, presented to the library, were laid on the table.

Mr. David Bermingham, Roscrea, presented to the museum a very fine hatchet-shaped bronze celt; also a tradesman's penny token, being that struck by "Walt. Brice in Cornmarket, Dublin."

Mr. Love, Annaghs Castle, Co. Tipperary, presented a gun-money shilling of James II., found in the old castle there; and the chairman, on the part of sub-constable Grady, presented a gun-money sixpence of James II., found there.

Mr. Ernest H. Good presented a series of beautifully-executed photographs of cromleacs in the Co. Waterford, accompanied by descriptive particulars.

Mr. B. Scott presented a copy of *Finn's Leinster Journal* of Wednesday, 17th September, 1794.

Mr. J. O'Reilly, jun., presented a copy of the (London) *Times* of Wednesday, 14th August, 1793—then a very small sheet, of four columns on each page; it contained a report of the trial at Kilkenny Assizes of the persons charged with the murder of Mrs. Wilson, at Mooneenroe, near Castlecomer, in the anti-Militia Act riots of the Colliers.

Mr. A. G. 'Geoghegan presented a drawing and impression of a curious bronze signet-ring, found in sand-hills at Mulloghdue, Co. Donegal.

MONUMENTAL INSCRIPTION.

Mr. T. Alderdice, Belfast, transmitted a drawing, with descriptive particulars, of a tomb, composed of sandstone, in the churchyard of Ballynosagart, Co. Tyrone. Beneath a coat of arms was the following inscription:—

HERE UNDER IS INTERRED
THE BODY OF MISTRESS
MARY GRAHAM LATE YE
WIFE OF HENRY HARVE
OF TOLLYGLISS GENTLE-
MAN WHO DEPARTED
THIS LIFE THE 27 DAY OF MARCH
ANNO DOM MDCIX AND
IN THE 137 YEAR OF HER AGE.

The family of Harvey formerly held the large property now in the possession of Sir John Stewart, Bart., Ballygawley House; but of the lady here commemorated the only thing remarkable was the extreme old age to which she appears to have lived.

ANCIENT TIMBER STRUCTURES.

Mr. Robertson, hon. curator of the museum, reported the safe arrival of a quantity of curious pieces of ancient timber—oak and deal—which had formed a framed structure in the crannoge in Ballydoolagh Lough, and was presented by the Earl of Enniskillen. One of the ancient querns found in the crannoge had also been forwarded by his lordship.

Mr. Kyran Molloy, Clonmacnoise, wrote to inform the association of the discovery, at about a quarter of a mile south-east of the Seven Churches, in the direction of Lough Fenlough, of an ancient timber structure, over which there was 4 ft. of solid bog. It seemed to form a kind of framed passage, extending a distance of eight or ten perches, perhaps more, composed of side beams 25 ft. long, with a mortice at every 4 ft. 6 in., and a joist of 3 ft. 6 in. to support the floor. At every mortice there was a stake of about 5 ft. long, with a pointed end. He had taken steps to have all the timber preserved till it could be seen and reported on to the society by Mr. Graves or some one competent to decide as to its original design and object; and he promised to keep a close look out for any further discovery in connexion with it.

Mr. Watters, Town Clerk, brought under the notice of the members several valuable historical documents from the municipal archives at present in his custody.

Mr. Prim pointed out the great general interest of the documents brought under the cognizance of the society now and at last meeting by Mr. Watters, but remarked that, in particular, the papers having reference to the Desmond Family were brought to light most timously at this moment. Mr. Fitzgibbon, Croghane House, and his brother, Mr. A. Fitzgibbon, of London, were most liberally paying all the expense of the publishing in the association's "Journal" of a Memoir of the Earls of Desmond (from which great house the Fitzgibbon family had branched), with suitable illustrations, under the editorship of the Rev. James Graves. The documents now brought forward by Mr. Watters, and by means of which the family history at a most interesting period was elucidated in a most interesting way, would prove very gratifying to the Messrs. Fitzgibbon and Mr. Graves.

Amongst the other papers brought before the meeting were—

"The Drumgay Crannogs" (second notice)—by Mr. W. F. Wakeman, Enniskillen.

"The Age of the Stone and Bronze Antiquities found in the River Shannon, as bearing on the Antiquity of Man in Ireland"—by Mr. J. Long, C.E.

"The Precious Metals and Ancient Mining in Ireland"—by Mr. R. R. Brash, M.R.I.A., Cork.

The usual general vote of thanks to donors and contributors having passed, the chairman declared the meeting adjourned till the first Wednesday in January.

THE NEWRY WATER SUPPLY.[*]

In this pamphlet Mr. Bower gives a *resumé* of what has taken place, with respect to the proposed supply of water to the Town of Newry, since his professional assistance was sought at the close of last year, and as to his subsequent treatment by the contending parties. As his apology for coming thus before the public, he says:—

> "The question may be asked why I have thought proper to expend time and money in this publication? My answer is, that I have been forced to do so by statements, publicly made, by one or more of the Commissioners of Newry; by things done officially by some of them or by their officers, and by action taken by the body of Commissioners, or their majority, in the matter of the supply of the town with water; on which subject, when the town was threatened to be saddled with a bad and costly scheme, they voluntarily—and in the most business-like manner—sought and obtained my professional assistance, which, having obtained, they endorsed and relied on it till the enemy was 'driven from their gates;' but soon afterwards (without an atom of reason given by which any intelligent mind should be influenced) took up another scheme, which is comparatively worthless."

Mr. Bower proceeds to give such engineering reports, opinions, and facts as were at his disposal, and which were necessary to show the peculiar position in which he was subsequently placed, both professionally and otherwise. After having in company with Mr. B. B. Murray, "Town and County Surveyor." examined the various sources of water and sites of reservoirs for the supply of water to the town, a joint report is furnished to the Town Commissioners, and approved of by them. At the request of the Chairman of the Water Committee, Mr. Bower visited Newry shortly afterwards, and having met the committee,

> "Conducted them to the Glen Head, and, standing on the site of the embankment necessary to be constructed so as to form the resorvoir, I described to them the nature of the works necessary to be executed for the purpose, when they expressed their unanimous satisfaction and approval of the site, declaring it to be admirable beyond comparison. If there was any dissentient opinion, or any individual retention of any other view, there was no audible utterance; I was of course well pleased with the result, but rather surprised to find that there were some of the Committee who (like Mr. Murray) had never been on the edge of the natural basin until I brought them there,—a basin scooped out by the hand of the Creator, almost within a stone throw of the town, and with an ample supply of the purest water provided for their use."

Mr. Bower prints several reports, petitions, opinions, reasons, &c., and criticises each as it passes.

We make room for a report of Mr. F. A. Doyle, C.E., Kingstown. In noticing the "Glen Head Scheme," this gentleman states:

> "The rain basin, as regards both the quantity and quality of its water, cannot be questioned—the site of the reservoir at Glenhead is admirably chosen, at an elevation of 250 feet over sea level, is situate westward within one statute mile of the centre of the town, and not a quarter of a mile from the borough boundary. This situation, for both storage and service distribution, is highly favourable. The natural configuration of the ground is also peculiarly well adapted for a reservoir—narrow gorge of not more than 200 feet in top width, requiring an embankment of only 20 feet high to impound (within an area of 13 acres) a supply of water equal to 80 days' consumption of the whole population. All the requisite works would be of the very simplest character, the materials for construction close at hand, and the natural ravine carrying 'The Glen Stream' below, affording a steep and rapid channel of escape for the surplus and impure water from the waste weir and storm channels.
>
> "From the analysis by Professor Hodges, it is certain that the Lower Glen Head Rain Basin does not require to be supplemented by 'The South Mountain,' or 'East' or 'West' mountain Rain Basins; and perfect reliance may be placed on the natural supply now flowing through the site of the reservoir. I, therefore, confidently and most strongly recommend 'The Glen Head' site, as fulfilling all the essential conditions of a reservoir for a town supply. Thus, it has been written by a celebrated hydraulic engineer:—'The efficiency of any water supply is in direct proportion to the quantity of water stored, with a sufficient head, and as near as possible to the centre of distribution.'
>
> "I have carefully examined Mr. Bower's estimate of the cost of its construction, and from my own knowledge of the prices at which similar works have been executed in this country, I have no doubt of its being quite sufficient for the purpose."

Mr. Bower offers to guarantee the carrying out of this scheme for the sum of £12,250, including all engineering and superintendence. The whole subject has been, we learn, referred to Mr. Hawkesley, C.E.; his recommendation should be carried out.

The typography of this pamphlet (even supposing it was only intended for "private circulation" by the author) is not very creditable to the printers.

Two large lithographed sheets accompany it, and exhibit the several schemes suggested.

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[*] "Reports and Observations on the subject of a Supply of Water to the Town and Borough of Newry. By John Bower, M. Inst. C.E." Pp 113. Dublin · Forsters, Printers, Crow street.

INDUSTRIAL PARTNERSHIPS AND CO-OPERATION.

In the Economy and Trade Department of the Social Science Congress held at Newcastle-on-Tyne, several interesting papers were read on Industrial Partnerships and Co-operation among Workmen. We give below an extract from an address by Mr. Rupert A. Kettle on the subject. We may mention here that Mr. Rupert Kettle has long been favourably known as a mediator in trade disputes between employers and workmen; and he has been often appealed to on an arbitration by workmen, who have perfect reliance on his rectitude and fairness, and who have always abided by his decisions.

Mr. Kettle was born in 1817; was called to the bar in 1845; has been a justice of peace and a deputy lieutenant for the counties of Worcester, Hereford, and Merioneth. In 1859 Mr. Kettle was appointed county court judge of circuit, and has sat in courts held at Kidderminster, Dudley, Droitwich, Sedbury, Evesham, Tenbury, Bromsgrove, Upton, Pershore, and Worcester. The selection could not have been a better one than that which placed him as chairman in the Economy and Trade Department of Section B.

The extract which we give from Mr. Kettle's address saves us the necessity of entering at present into the subject. Industrial partnerships have been more or less a success in England and on the continent, when honestly carried out. It is strange that in the Irish metropolis or throughout Ireland scarcely any attempt has been made by workmen on their own account to test the system of co-operation. In London and Paris, the piano makers, organ builders, cabinet makers, and even the building operatives *in globo*, have formed themselves into partnerships for executing orders and contracts. Every man sunk his little capital or skilled labour, and was contented for the time to take his dividend from the profits, however small they might be; and instances are many where but fifty pounds were known to be in hand at first, the capital increased in a short time to thousands. Whether workmen associated in a body and parted with their skill to the highest bidder or for the highest wages they could get, or co-operated by a partnership and became contractors, they were honestly and legally doing what they were entitled to do, presupposing they had no covert design to interfere with the free action of other employers of labour. It is no longer unlawful for men to combine to raise their wages, or raise themselves individually or collectively; but we shall now let Mr. Kettle speak:—

Trades' unions, formed after the repeal of the combination laws, were founded on the old basis of protection, which everybody believed in at that time. They carried on a system of protection which kept people in a state of artificial bondage, instead of allowing them the free exercise of their own power, and the free development of their own wealth by association. All that, he trusted, had passed away now; but still they could not wonder that men who had no power to combine their surplus capital for purposes of production, should have endeavoured to protect themselves by unions for purposes of resistance. Now, by the alteration of the partnership laws, men were permitted to associate together in various ways, and the results of discussions in that section showed that these things were exciting so much thought among working men that in the course of years they might be expected to avail themselves extensively of the opportunity which the Legislature had allowed. The position in which they stood at the commencement of their deliberations in that section was that the working men complained that wealth was unequally distributed with trades' unions framed for the purpose of resistance, and desired to know whether there was not some other mode by which they could combine together in order to secure some more adequate share of their own industry applied in conjunction with the capital of their masters. And the first thing we should naturally turn our attention to would be that of partnerships of industry, which stood first on the paper. They had a most excellent paper on the subject, and the advantage of the presence of Mr. Head, who had tried it experimentally at the works in which he was a partner. But the difference between associations called industrial partnerships, co-operative societies, and ordinary partnerships is very distinctly marked. He would begin by dividing them into the purposes for which they were formed. They were formed either for the purpose of production or distribution. Associations for distribution were those under the name of co-operative associations, and were collateral to the main purpose before them when they framed the programme for that section. They were associations of consumers for the purpose of coming to the producer direct, without the intervention of a middle-man. In the same way, he would suggest, other associations should take into their own hands the machinery of production. In spite of some displacement in the case of shopkeepers, no one contended that co-operative associations for distribution were not an unmixed good. He held that they were so, economically as well as morally. Co-operation, for the purposes of production, of course had its limits, and these were narrower than the working men themselves supposed. He had now in his mind the plate locksmiths in his own town, whom he so much respected, and whose course he had watched with so much interest. He had watched the struggle these poor men had gone through, and having them in his mind, he asserted that the working classes could never join together in productive associations, even on a small scale, until they had realised the system of credit banks, which had been so successful in Germany—an application of the ordinary money-club system. If the working men could have confidence in each other, as the Germans have shown that working men ought to have, they would remove the difficulty in the way of men clubbing their means to set up productive workshops. They wanted capital and credit to do this. Capital was the unconsumed part of a man's earnings which he laid by for productive purposes. On this credit could be obtained; and the two, combined with labour, could produce for purposes of distribution. And if, therefore, by industry, combined with prudence, men could raise one-third of the necessary capital for co-operative production capitalists would have sufficient confidence in the working men to lend them other two-thirds, as the German system had abundantly proved. With regard to industrial partnerships, he would not be disposed to class that of Messrs. Fox, Head, and Co. as a partnership. The workmen were not partners, but received wages, and a bonus, which was part of the wages. It might be called profit, or part of profit, but unless a working man had an interest in the capital, he for one would not be disposed to classify it as profit. The plan of Messrs. Fox, Head and Co. had been tried among the type founders of Paris, and at several works in Rouen, in substantially the same form of bonus system, and, so long as benevolent employers lived to conduct the operations, such arrangements had been found to answer very well, but they were always precarious, because they depended upon the good-will and good faith of those at the head of the establishment in conducting the business transactions between masters and *employes*, for the latter had no voice in the management, no control over the results in which they were said to participate. The next form of partnerships were like the French and Belgian partnerships established under the Code Napoleon. They were now coming up in this country as industrial partnerships. They were organizations of capital and labour under which the owner of the capital took a certain interest, and the cost of management to himself absolutely, and then divided in proportions previously determined between himself and those who assisted him in the plan of capital and labour acting in combination. But there was another state of things which neither the one nor the other would meet. Some works were very large, and the tendency was to economise labour by means of large works. There mnst be a maximum beyond which it was not economic to go. The eye would often rest on some gigantic concern which would at once strike one with the impossibility of working men establishing such concerns by any combination of their means such as had been suggested. There large capitalists must deal independently of workmen, independently of all in their own business, and independently of those societies of the co-operative and industrial partnerships referred to. There was another form of association—an organisation for the purpose of contract which the labouring classes might adopt. He saw no reason why bricklayers should not organise themselves to take a sub-contract for the brick work of a building, masons in the same way for the stone work, and carpenters for the wood work. Applying it to the industry of that neighbourhood, he saw no reason why there should not be such an organisation of labour as would enable the workmen to contract with those who purchased their labour. He was not, however, prepared to say how that could be carried out. If an arrangement could be made so that the master would have a complete guarantee for the performance of the contract, the arrangement would be much more beneficial to both parties. See what an advantage such a system would be to the workman. Under the old hiring system, as he had said, the master took all the risk, and found full work for the journeyman for the whole year; but, under the new system, the man, having no such guarantee, took fully one-half of the risk. And it happened thus. There was no datum line on which the intrinsic value of labour could be determined. The modes of production changed so much from year to year, that it was impossible to say, with any approximation to certainty, what such a line should be. The master only took so much of a man's labour as he might require, and did not guarantee to employ him for any particular time or particular quantity. A man went into the employment of a master who had the mercantile part of it, made the bargains, and watched the market to do the best he could for himself; but, if the results of the master's trading was that the mill was put on short time, then the man was left with his whole stock of labour, and the master called on him for four days' labour instead of six. Thus he bore the risk under the modern system, but covered it by the insurance of demanding and obtaining higher wages. In the business of a dealer in drugs, the profit was very large as compared with that of a dealer in sugar, because the latter was an article in such constant demand that it did not involve the risk and cost of holding stock as in the case of drugs, the dealer in which was compelled to cover his extra risk by extra profit. In the same way, a workman being compelled to hold his stock of labour and keep it constantly on sale, whether it was wanted or not, was obliged to recoup himself through the medium of a higher rate of wages. This must be so unless some organisation could be devised by which money should be received into some common fund to afford an insurance against this loss of work. And it was the duty of the master to see that justice was done to the working man in relation to this risk. He believed the best thing the man could do would be to be his own insurer, because he could do it cheaper. To enable working men to accumulate capital they must practise industry, self denial, and frugality, in the same way as the men who are now rich did in their time: but even then having regard to the magnitude of commercial engagements in modern times, they could only hope to compass the small undertakings of co-operative work. For a system of greater magnitude they would have to rely on some such organisation as a joint-stock labour company, to deal with the capitalists purchasing their labour. So far they had arrived at a summary of the discussion on one important branch of social science referred to that section. What he had described could not be done at once, because it was impossible to re-organise now the productive system of this country. The change must be gradual, and he could hardly hope to see it in his own lifetime. Disturbance of industry for a mere experiment is so perilous that he would not advise them to attempt it. It must be done tentatively, and under the conviction that if you made a mistake great domestic misery or starvation might be the result. The best mode of dealing with the present relation of parties, was to accept the state of things as we found it, and see that both avoided conflicts by thoroughly sifting bargains before entering into them. So far as these bargains might be matters of figures and estimate, they should be subjected to the best mode of examination that could be found; and it was the want of some adequate machinery for making business arrangements between masters and men, founded on a correct knowledge, on both sides, of the materials on which calculations are based, that the system of arbitration boards was adopted. He did not think such boards would have the power to raise or reduce wages any more than mere bargain-making in a market could permanently affect or reduce the prices of horses and sheep. Prices depended on considerations which could not be permanently affected by the action of bargain-makers. The working classes of this country, in common with their masters, neither fought for the spoliation of socialism nor the charity of philanthropy—all they desired was a fair field and no favour. Now they had a fair field by breaking off the last fetters of the law of contract. And they should now devise such an amendment of the law as to give further facilities to trade organisations on the bases of mutual help and mutual credit. Their recommendation to the council would be on behalf of prompt practical legislation, and if this were done it would enable the working classes to combine their savings and credit in such a way that they could establish organisations of co-operation, and join with their own money in the operations of industrial partnerships.

Water Supply for Waterford.—At the meeting of the Corporation, held on Tuesday (the Mayor in the chair), it was agreed to adopt Mr. Hawkesly's report to provide a water supply from Knockaderry, at an estimated cost of £35,000. The law agent was directed to take the necessary steps to obtain a bill in the ensuing session of parliament.

B

ROSCOMMON ABBEY AND O'CONOR'S TOMB.

The following letter has been addressed to the editor of the local *Messenger* by Sir Wm. R. Wilde :—

Dear Sir,—In thanking you for your attention during my recent visit to the assize town of my native county, allow me to offer a few observations on the deplorable state of the ruins of the Abbey. The interior of that venerable pile—filled with the graves of churchmen and chieftains, by whose patriotism and piety it was supported and endowed —is now a mass of rubbish, and the broken fragments of its beautifully-carved pillars, doors, and windows, are scattered about. It is open to the neighbouring cattle, whose chief resort is the site of the altar in the northern chapel, which has rendered the spot scarcely approachable. Details are unnecessary ; the dilapidation is going on slowly but surely, and many portions would long since have crumbled to the earth but for the fostering arm of the giant ivy, that has delayed its fall.

The present state of this structure is a disgrace to the Christian religion—a shameful *national* neglect, and to leave it longer so desecrated will show that, while Roscommon can liberally contribute towards patriotic funds, and even for the relief of foreign nations, its inhabitants allow this noble ruin to perish, and the veritable tomb of its royal founder, Felim, son of Cathal Crovederg O'Conor, to be polluted by filth and eventually obliterated by the *débris* of the walls of the surrounding sanctuary.

I rejoice to learn that you and others sympathise in these sentiments, and have already set on foot a subscription for the preservation of the Abbey, and that The O'Conor Don has liberally contributed to it. So he ought, and so ought every one of the name in Ireland, and, let me add, in America, for undoubtedly this tomb, besides being an historic monument of surpassing interest, and a beautiful work of the art of its period, was the last resting-place of one of the chief kings of Connaught. Surely the eloquence and influence of your justly-esteemed parish priest will not be wanting on behalf of this good work, especially in allaying public prejudice in dealing with churches and graveyards ; and I am sure your worthy County Surveyor would lend a helping professional hand. I willingly place at your disposal whatever antiquarian and architectural knowledge of such matters I may possess.

We cannot now restore to its original purpose the noble Abbey of Roscommon, but we can arrest its further decay—render it decent to the sight, display its architectural features, and bring to light the tombs of its kings and the graves of its abbots, and those of the Roscommon families that were interred within its walls. We cannot do all this without money, but we can at least perform the following works at once. Let a proper wall be built at the north-western side, from Mr. Kelly's mausoleum to the angle of the building in that direction ; let an iron gate be put up at the western entrance (we can get one for a couple of pounds) ; cut down one or two of the old trees that are now threatening the destruction of the eastern gable ; lop off the straggling branches of ivy from the top of the walls, especially at the southern side. Let us at once clear out the site of the high altar, and restore the O'Conor Tomb, and place round it the effigies of the Gallowglasses, several of which have, I am aware, been removed from their original site years ago. I do not regret this latter circumstance, as I am sure they have been better preserved than if they had been left to the tender mercies of the "gossoons" who played pitch and toss on the tomb, and had a cock shot at the noses of those effigies. The present holders of these and other sculptured stones will, I am sure, when the Abbey is in course of repair, be glad to assist in its preservation and reparation. I possess several drawings and other materials which can be made use of for the intended purpose. Then, when the Abbey is properly cleared out, like that at Boyle, Cong, Rosserrily, &c., it will not shock the feelings of Saxon tourists, and may form a pleasant resort for your townsmen, who can contemplate with impunity the surrounding ruin, and picture to themselves the scene when the bishops and abbots of Connaught stood amidst the waving of censers and the perfume of incense before the brilliant lights on the high altar, to receive the long procession of priests and monks, that, chaunting the solemn requiem for the dead, filled up the long aisle when the body of their king, carried by his mail-clad warriors, and followed by his clansmen and chieftains, was about to be deposited in that place of honour, which his country and his Church had assigned him, beside the sanctuary at which he had so often worshipped.

I fear to prolong this letter by quoting from various authors as regards the state of the Abbey during the last fifty years, but will conclude by offering you for publication a few historic notices that may interest, and help, perhaps, to stimulate the patriotism of your readers.

An Abbey of Regular Canons was founded at Roscommon by St. Colman, a disciple of St. Finian. He flourished A.D. 540.

In 807 the Danes plundered and sacked this Abbey, where were subsequently interred several of the abbots of Clonmacnois.

In 1123 a portion of the true cross was forwarded by the Pope to Ireland, and "enshrined at Roscommon by Turlough O'Conor ;" so—as I have already shown in my book on Lough Corrib—that magnificent work of art, now in the Royal Irish Academy, and generally known as the "Cross of Cong," was made by O'Echain, the celebrated artificer, either at Roscommon or at Cloncraff (not far distant), of which latter place he was Comharb. It was subsequently carried by the O'Duffys to the Augustinian Abbey of Cong, county Mayo.

A.D. 1155.—At the death of Turlough the Great, monarch of Ireland, it is said, "he largely augmented the estates of that house, and directed the Host to be carried with great solemnity, attended by many of the clergy and other religious men throughout the kingdom, and then to be deposited in this Abbey, in a tabernacle prepared for it, of immense value."

1265.—"Felim, son of Cathal Crovederg O'Conor, the defender and supporter of his own province, and of his friends on every side, the expeller and plunderer of his foes—a man full of hospitality, prowess, and renown,—the exalter of the clerical orders and men of science—a worthy *materies* of a king of Ireland, for his nobility, personal shape, heroism, wisdom, clemency, and truth,—died after the victory of extreme unction and penance in the Monastery of the Dominican Friars at Roscommon, which he himself had granted to God and that order."—*Annals of the Four Masters.*

1461.—"Eadh Tirlough Oge O'Conor, joint king of Connaught, was interred here."

The Rev. Dr. O'Conor, when writing the memoirs of his grandfather, Charles of Belenagar, in 1797, says :—"The steeple of the Abbey, of late undermined by a gentleman who wished to procure materials for building a house, fell some two years ago ;" and O'Donovan, writing in 1837, remarks upon the injury done to the Abbey and monument.

1445.—"The Friary [of Roscommon] having gone to decay, Pope Eugene V. granted a Bull, dated at Rome the third of the Nones of May this year, to encourage the faithful to contribute to its reparation."

To recite the entries from our voluminous annals both in manuscript and print connected with the Abbey of Roscommon, and to recount the names of the various learned clerics who flourished in it, and the chiefs who were interred there, would, I think, be unnecessary ; for if my fellow-countrymen will not believe their eyes, nor accept the foregoing, "neither would they believe though one rose from the dead."

I do not know who owns the fee-simple of the Abbey of Roscommon, but I hope he will duly appreciate the honour afforded him of contributing to its clearing and preservation. Don't let this good work remain another week without something being done towards these preparatory measures to which I have alluded. I will myself be happy to receive subscriptions in Dublin.

SEWAGE UTILIZATION.

At the Social Science Congress at Newcastle-on-Tyne, Mr. James Blackburn, of the Aldershott Camp Farm, in considering the question, "What is the best method of disposing of sewage and excreta ?" observed that the old ashpit system of collection, which necessitated the removal of same by horse and cart, has been condemned on sanitary grounds, involving as it did a great waste of manure. There are, however, a few plans based on the dry system of collection, of which Moule's earth-closet has attracted the most attention ; that also known as Evux's is similar in principle, inasmuch as both use a dry material for absorbing the refuse which is afterwards used as manure ; but these do not deal with other waste liquid matters, for which a system of sewers would have to be provided, and their contents treated some way or other at the outfall. I think it may be presumed that water has long been decided on by sanitarians as providing the best means of bearing away all the refuse of our towns, which will have to be taken on to the land in some form or other. Filtration, chemical treatment, and irrigation have been tried with a view of accomplishing this. By filtration the soil and suspended matters are easily separated ; the same is done more perfectly by chemical treatment, lime or alum forming the chief ingredients by which precipitation of the suspended matters is brought about. That known as the lime process has been used at Leicester, Tottenham, Aldershott Camp, &c., but has been abandoned. Compounds containing alum have been tried at Northampton, Stroud, and other places ; also by the A B C Company at Leamington and Hastings ; but it has been found, on careful investigation by the Rivers Commission, that they fail in removing the matters in solution, while the dry manure is of very inferior quality. Irrigation, which implies taking the sewage straight from the outfall to the land, holds out great hopes of success, both as regards utilizing the manure and preventing the pollution of our rivers ; to do this with the least waste and offensiveness, the sewage should be delivered on to, and absorbed by, the soil in a fresh state before decomposition has commenced. The waste of this manure has been enormous, and must have correspondingly lessened the food-producing power of the country, and it really appears if we could have gone on pouring everything into our rivers with impunity, we should have done so to all eternity ; but this evil may now be said to be gradually working its own cure. There is only one outlet for the world's refuse, and that is vegetable production. No filter nor chemical or mechanical contrivance can compete with the soil as a medium for purification ; it abstracts not only the suspended matters, but also those in solution, then retaining them until appropriated by the plant, and this cleansing power is ever being renewed by the plants, which are constantly withdrawing the deposited impurities and rebuilding them into vegetable structures. Water, besides having a value of its own, is an economical carrier, and efficient distributor of manure, which in sewage is in a very fine state of division ; it insures such a complete admixture with the soil as cannot be arrived at by any other means, and the efficacy of all manure depends to a great extent on its uniform diffusion. The water supply of towns varies from 50 to 15 gallons per head per day, and in many instances the sewers receive a large addition of subsoil drainage; this is a serious drawback on heavy soils, and also in those cases where pumping has to be resorted to. My agricultural experience in the use of sewage leads me to prefer a supply of 25 gallons a-head as the best measure of dilution, bearing in mind that it has to be applied through all seasons of the year; the less storm water that finds its way into the sewers the better, as the matters it may bring down are comparatively worthless. The amount of sewage that can be advantageously used on land depends a good deal on how near it approaches in texture to a sand or a clay, the former through the season requiring more than the latter, but taking an average medium soil, from 60 to 70 head of population per acre per annum may be necessary, so that a farm of from 100 to 120 acres will profitably consume the sewage of a town of 6,000 or 7,000 inhabitants, amounting to 700 or 800 tons a-day; but in sewage farming, more even than in ordinary agriculture, a maximum return from a given area is what should be aimed at, as the great means of reducing the heavy fixed charges, many of which remain constant, irrespective of the produce. The land, unless resting on a porous stratum, will have to be deeply drained, and all irregularities in the surface which may interfere with the conducting of the sewage removed. Deep ploughing and subsoiling are then necessary, moving and aërating the ground to a depth of from 1 ft. 6 in. to 2 ft. The better the quality of the land the less sewage it will require. The difference between good and bad land is never adequately represented by the difference in rent, especially in the case of sewage farming, where the quality of the soil tells not only on one crop in the year, but on four or five in the same time. The sewage at the delivery on the farm must be rid of its solid matter, and as much of that in suspension as possible, as the clearer it can be applied, especially to grass, the better. The solid matter thus separated I have found to be a very poor manure. In this state it may be conveyed over the farm by open or covered main carriers and further distributed on the land from small open channels, which, according to the configuration of the ground, will either be arranged on the catchwater system, or, when very flat, an artificial slope must be obtained by ploughing into ridge and furrow. The cost of levelling and laying out the land will vary from £10 to £20 an acre. Italian rye grass and green crops of all descriptions are the most successful to cultivate; the former is first-rate food for cows, and also for horses, at a later period of its growth when cut and consumed in the house. From fifty to seventy tons may be raised per acre through the season. Rhubarb, onions, French beans, and lettuces thrive luxuriantly under proper treatment. In winter the deeply-ploughed land and grass will take the sewage and retain its manurial matter until the season of growth commences. I think the addition of one or two mineral manures for certain crops will be found economical, and productive of good results. Sewage cannot be used advantageously on old grass land, or for growing corn, and the scarcity of green crops in this country renders their cultivation the most remunerative, either as food for man or for conversion into milk, butter, or meat. On a farm of 100 or 120 acres there would be sixty acres under Italian rye grass, which, with a small amount of extraneous food, will keep 300 cows through the growing season, but in many places it is found profitable to sell the grass on the ground. As to the money value of sewage, chemists have estimated it at 8s. 4d. per head per annum, but in practice we have not yet approached this; the gross return has not been more than from 4s. to 5s. a head; but it must be remembered the whole system is completely in its infancy, and further experience will bring with it considerable amendment. As examples of what is being done in England, I may mention the farms at Barking, Croydon, Norwood, Bedford, as furnishing instances, out of some twenty or thirty, of what is being done; also Mr. Hope's farm, near Rumford, which from present appearances promises to be a most important example. My own farm on the Government land at Aldershott is an instance of reclaiming land by sewage, and which is about the most barren soil in Great Britain; fair crops of grass, potatoes, and cabbages are grown on part of it, but its natural poverty makes extraordinary demands on the sewage. Looking at these farms as means of purification, they may be considered a success, as shown in the analysis of the effluent waters made by the Rivers Commission; their inquiry as to the effect of these farms on the health of a neighbourhood was equally satisfactory. The economic use of sewage is really a national question, bearing very materially on the food-producing power of the country, not merely from the utilizing of the sewage itself, but also indirectly by manure produced from the consumption of so large an addition of green food, where its application to the land becomes general.

LONG RAILWAY JOURNEYS.

It is very questionable whether the American system would answer for us, although it might possibly do so on the Continent. The cause of the French having followed our example in this particular is readily accounted for from the circumstance that all their lines were but copies on a very slightly modified scale of our own. They were most of them laid out by English engineers, and constructed by English contractors, so that it would have been little short of a miracle had they done otherwise than partaken of our defects. However well adapted a particular class or plan of carriage may be for a line which runs for a distance of three thousand miles, and unites the shores of the Atlantic and Pacific, it needs but little common sense to divine that a precisely identical arrangement would not answer in cases in which the distance does not often exceed more than the tenth of that alluded to. Apart from the accommodation offered by the American plan, there is a difference in our social habits and customs which would seriously militate against the exclusive adoption of it. The same may also be said with regard to most European nations. It is not the adoption of any especial plan or design of carriage affording sleeping accommodation that we are contending for, but simply that on our English railways journeys occupying the whole night are continually and regularly undertaken, and that some arrangement should be introduced which would allow of a traveller taking genuine rest during the night. He would thus be enabled to transact any business he might have in hand on the day of his arrival at his destination, instead of being, as he frequently is, only fit to go to bed. We are quite aware that there are plenty of people who care nothing for the fatigues of a night journey, and in fact look upon it as rather "a good thing" than otherwise, but, on the other hand, there are also a large number who are completely knocked up by it. Ladies are particularly sensitive to this kind of fatigue, and we have known them to present so worn and jaded an appearance after a night's sojourn in a railway carriage that one would almost imagine they had walked the distance instead of being carried over it at the rate of forty miles an hour.

There is a point in connection with the particular system of the American railway accommodation that deserves mention. It has been stated by the advocates of that method that it is impossible for accidents and assaults against private individuals to occur owing to the peculiar facility afforded for constant inspection and surveillance by the officials, by means of the especial nature of the construction of the carriages. This statement has, however, been proved to be false, and the American carriages to be no safer than our own in this respect. About six years ago, a regular band of roughs took their places in a train from New York to Lake Erie, killed two or three of the passengers, and wounded several others. So much for the security to life and property on the transatlantic lines. We have already drawn the attention of our readers to the gradual augmentation in the length of the railway journeys that can now be made in the United Kingdom. The same result has taken place on the Continent. The longest continuous journey within the French Empire extends from Cherburg to Nice, a distance of 978 miles, while the international through-journeys starting from Paris are as follows: From Paris to Berlin, 770 miles; to Vienna, 963 miles; to Madrid, 928 miles; and to Cadiz, 1,474 miles. Will any one deny that for journeys of such lengths some comfortable sleeping accommodation ought to be provided? The difficulty appears to lie in the circumstance that the American system is not applicable in the case of European countries, in consequence of the difference that prevails in the habits and social ideas of the inhabitants of the two hemispheres. But there is clearly some solution to the problem, and it no doubt will be found in a combination of the two systems. What is wanted is a carriage which is so designed as to afford some of the advantages of the American plan without, at the same time, sacrificing those which are inseparably connected with European tastes and prejudices. A carriage of this description should combine the freedom of the one principle with the privacy of the other. A traveller should in fact, have the choice of availing himself of either or both at his pleasure. The simplest method of effecting this combination appears to be in the adoption of a class of carriage having two storeys. Some of these have been used on the Parisian tramways, and found perfectly satisfactory. The lower storey is divided into first, second, and third-class compartments, and is constructed in strict accordance with European habits, or, as it may be said, after the English fashion. The upper is arranged on the American plan, having a longitudinal passage running the whole length of the carriage, with the seats disposed on each side. The advantage this particular description of carriage enjoys over the American example, is that it accommodates more passengers with a given volume, and consequently with a given weight. This is a most important advantage. In any train there are two portions into which the total load carried may be subdivided. The one is termed the paying, and the other the non-paying load. The engine and rolling stock evidently constitutes the latter of these, while the former is composed of the passengers and whatever luggage or goods that are transported by the train. If, therefore, we suppose the weight of two trains to be the same, but that one has a greater capacity than the other, that is, it will hold a greater number of passengers, the paying load at once becomes augmented, and the proportion between the two increased. Had we space we would willingly enter upon the question of the possibility of adapting two-storeyed carriages to those lines in England upon which long journeys are made. The obstacle that appears insurmountable would seem to be passing the bridges and tunnels, as it would be difficult to so arrange the height of the carriage as to pass under the limited headway. Something might probably be gained in this respect by lowering the floor of the carriage, and the wheels might be put under the seats, as is the case in the carriages of the broad gauge, only there is no necessity for sticking them just in front of the door, to the great inconvenience of those getting in and out. The minimum height from the top of the rail to the underside of any bridge passing over a line is 13 ft. 6 in., so that it would not be possible to make the height of the storeys more than 6 ft., and that would allow scarcely enough room for the frame of the carriage itself. This height would not be wanted in the lower storey, as the occupants would never take any but a sitting or recumbent position, but on the other hand would be little enough for the upper storey.—*Building News.*

CHURCH OF ST. COLUMB, OMAGH.

The memorial stone of the Church of St. Columb, now in course of erection, was laid on Saturday by his Grace the Duke of Abercorn, in presence of a large assemblage. Raised on a site immediately adjoining the edifice it is intended to supersede, St. Columb will consist of a nave, chancel, north and south transepts, aisles, south-west porch, organ chamber and vestry, tower and spire. It will afford accommodation for upwards of 600 persons. The cost of the building will be about £5,400, the greater part of which sum has been contributed by the parishioners, the balance being a grant from the late Ecclesiastical Commissioners for Ireland. The principal dimensions of the building are as follows:—Total length from east to west, 94 feet; from north to south in transepts, 88 feet; width of nave, 36 feet; of transepts, 35 feet. Height from floor to apex of nave roof, 52 feet; size of south-west porch, 13 feet by 12 feet. The style of the building is Gothic of the 13th century, the details throughout being of a plain and massive character, the only part in which the architect has been allowed to indulge in work of an ornamental character being the west front, which faces the street, and is most exposed to view. The west windows on this front will be the great feature of the church, and will consist of four equal lights within a deeply-moulded arch rising from carved capitals and shafts, the sprandil being filled with geometrical tracery in cut stone. Under this window runs an arcade of five arches, carried on sandstone capitals and shafts, enclosing five lancet lights, and stopped by massive buttresses of deep projection on the north and south corners. The tower of the old church is to be retained, but will be thoroughly remodelled so as to harmonize with the new building, and the spire, when complete, will rise to a height of 125 feet over the level of the church floor, or nearly 30 feet higher that it is at present. The works are being carried out in accordance with the designs of the architect, J. E. Rogers, Esq., F.R.I.A.I., 179, Great Brunswick-street, Dublin, under the superintendence of William Hunter, Esq.; the contractor being Mr. John Collen, of Portadown.

WICKLOW COPPER MINING COMPANY.

The half-yearly accounts of the Wicklow Copper Mining Company show that the profit was again small, being about the same as in the previous six months, the figures being as follow:—Net profit for March half-year, £1,733; for September half-year £1,711. The former sum not having been distributed at the time, the directors now propose to pay a dividend of 2s. 6d. per share out of the accumulated profits, leaving a surplus of £1,320 in hands. The debtor side of the profit and loss account presents no important feature, the total charge against the half-year being £7,913 as compared with £8,386 for March half-year. On the creditor side we note a decrease of 2,200 tons in the raisings, and of £1,500 in the produce of pyrites, and an increase of 2,000 tons in the raisings, and of £800 in the produce of iron ore, resulting in a net decrease of 200 tons in the total raisings, and a decrease of £748 in the total produce. The balance sheet shows that the financial position of the company has been improved. The item of £5,000 new three per cent. stock, cost, £4,317, which had constituted part of the assets, has disappeared; but it is replaced by Bank of Ireland deposit account for £6,068, and there is an increase of £350 in the balance at bankers, bills receivable, &c., which amount now to £3,225. The Indemnity Fund and Sea-risk Fund are represented as before by a total of £3,175 new three per cent. stock, cost £2,789, the entire of these items of asset amounting to £12,082, as compared with £9,982 last time. All ores outstanding amount to 41,764 tons (of which the full particulars are given in the present report), valued at £25,046, against 44,619 tons, valued at £26,195 last time, showing a decrease of 2,845 tons and £1,149 sterling. The directors state in their report that the alkali trade, which had remained in a very languid condition during the half-year, has recently improved, owing to the interruption of French and German exportations, caused by the war. They also give a most encouraging report of the experimental trials of the new patent process for the utilisation of the hitherto valueless smalls incumbering the surface of the mine, and they congratulate the shareholders upon the prospect of renewed prosperity in the affairs of the company in connection with the acquirement of the Arklow Chemical Works, at a cost of £15,500, which will enable the Wicklow company to become manufacturers of their own ores.

MOORE'S STATUE.

A Moor in colour by a Moore design'd,
And *Little*, unlike Moore, to our mind.
Botch'd at first in pedestal and base,
Botch'd again to fit him to his place;
A mounted ogre wrapp'd with cloak around,
Taking notes of things upon the ground.
Oh, Smyth! whose chisel, led by Gandon's taste,
Has deck'd our buildings with a sculpture chaste.
Oh, Hogan dead! had not vile men obscure
Murder'd you, we'd had no murder'd Moore;
But some there are who think our city grac'd
By statues poised, in which she is disgrac'd.
Oh, rise, Art! rise above the fetid breath
That breeds corruption, and a *living* death.

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DESIGN FOR A VILLA.

With this number we give an illustration of a Villa, the cost of which would be about £2,500. It is designed in the Early Gothic style, and is an endeavour to obtain a good effect in honest material without any expensive or elaborate detail. The accommodation on the ground floor consists of spacious dining and drawing rooms, with a breakfast parlour and billiard-room. The serving department, which is completely detached from the dwelling-house proper, is yet in close proximity to the dining-room,—a point neglected in many so-called well planned houses,—and consists of a kitchen, scullery, larder, pantry, w.c., and fuel store. Over this is situated two servants' bed-rooms and nursery. The first-floor plan of the dwelling-house contains a study or bed-room, three bed-rooms, dressing-room, bath-room, and w.c. The conservatory, which is entered by a glazed cloister or passage from the drawing-room, is octagonal on plan, with a high-pitched roof, with carved figures on the exterior angles. The stabling is proposed to be placed at the rere of the building, at the end of a stable-yard or kitchen-court, and would add to the general effect.

The drawing is from a design by Mr. J. L. Robinson, A.R.I.A.I.

THE PUBLISHING AND WHOLESALE BOOKSELLING TRADE.

Amongst the numerous improvements in the business premises which we have to record, none gives us more pleasure, as exhibiting the large increase in the publishing and wholesale bookselling trade of Ireland, than the new additions recently erected for Messrs. M'Glashan and Gill, of Up. Sackville-street. This enterprising firm, finding its accommodation far too limited for its largely extending requirements, have thrown down a number of confined buildings, which existed on the intervening space between their front and rere premises, and have erected on their site a continuous building, 76 feet by 27 feet, of proportionate height, and now connecting the entire together; spacious galleries, with cast iron ornamental balustrading run round three sides; the roof is constructed upon wrought iron principals, conveying an air of lightness and solidity, which harmonises well with the general features of the building, which is lighted by a range of lantern sashes, glazed with ribbed plate, and provided with ample means of ventilation. The heating will be upon the newest principle of hot water pipes, which are carried through every department.

Few can form an idea, except those within our circle, of the large amount of books issued from the press of this firm; in fact, wherever the English language is spoken, and particularly wherever our countrymen have located themselves—in America, in the colonies, or in other foreign countries, the names of M'Glashan and Gill, as publishers are "household words." This, in addition to their large import trade from the leading English and Scotch firms, renders their warerooms a busy scene at particular periods. As an enterprizing firm, contributing in the fullest sense to develope Irish resources, we heartily wish them every success.

The buildings have been designed by Mr. John M'Curdy, architect, and carried out with great fidelity by Mr. W. Hughes.

CORRESPONDENCE.

[*It is to be distinctly understood that although we give place to letters of correspondents, we do not subscribe* editorially *to the opinions or statements set forth in same.*]

CARLISLE BRIDGE AGAIN.

TO THE EDITOR OF THE IRISH BUILDER.

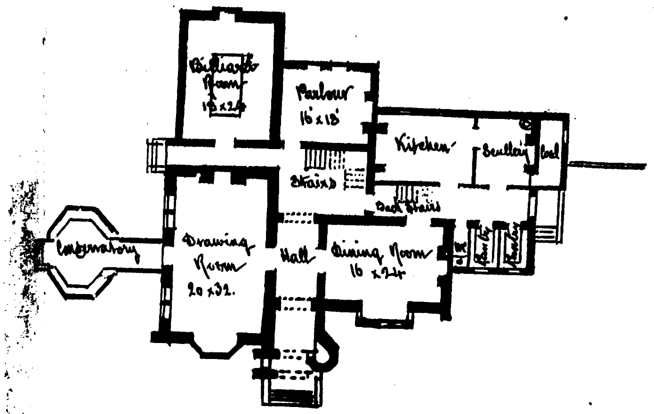
Sir,—After long and elaborate discussion, outside and inside the Corporation, the City authorities have come to the conclusion that they will build a *new bridge* over the Liffey, This reasonable conclusion has at length been arrived at. Would it not seem reasonable that the determination now formally expressed should have been come to before parties of skill were invited to make designs for a designated bridge? Now that they have come to the point *to build*, it is important that the public shall know what it is the Corporation propose to do in the erection. A resolution to erect a bridge may stop far short of what the public may expect. We all know that a bridge may be admirably adapted for discharging all the duties which it may be subjected to, and yet have its parts out of harmony with surrounding objects. A really perfect bridge structure should be designed, and erected without regard to any other consideration than that of the highest attainable duty.

It occurs to me that the *ornamental* and *bridge* parts of the proposed structure should be specially designed for their especial service—this would be an advantage. Nothing can well be more offensive than "stiff joints" in ornament. To avoid such blemishes, the ornamentation should not appear as excrescencies on the duty-doing parts of the bridge. A separation of the parts is desirable, by which defects in the structure, if any, may be fully brought out by test, and the bridge proved suitable for its purpose before expensive ornamentation be added. In this case, should any defect in the bridge be discovered after erection, it will not be necessary to set the ornament aside, and go to a second expense for the same thing.

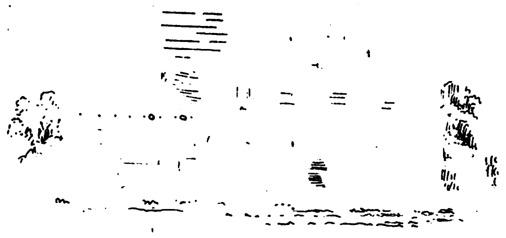
I assume that the structure, doing *bridge duty*, shall be designed with a strict regard for its especial function; in this lies the economy and permanence of the erection. If in the erection this be not attended to, then will M. Poncelet's reply to Mr. Stephenson be fairly rendered—"the bridge structure will be loading itself to break itself." If so, the chapter of accidents does not leave a sufficient margin for security, which of course goes against the permanence of the erection. Now, one of the causes which introduce this breaking element into bridges, is the selection of ornamental for structural parts, and hence, the unnecessary ornament is the first cause of weakness. The queer feature in the case is the introduction of radical weakness

THE II IS BUILDE

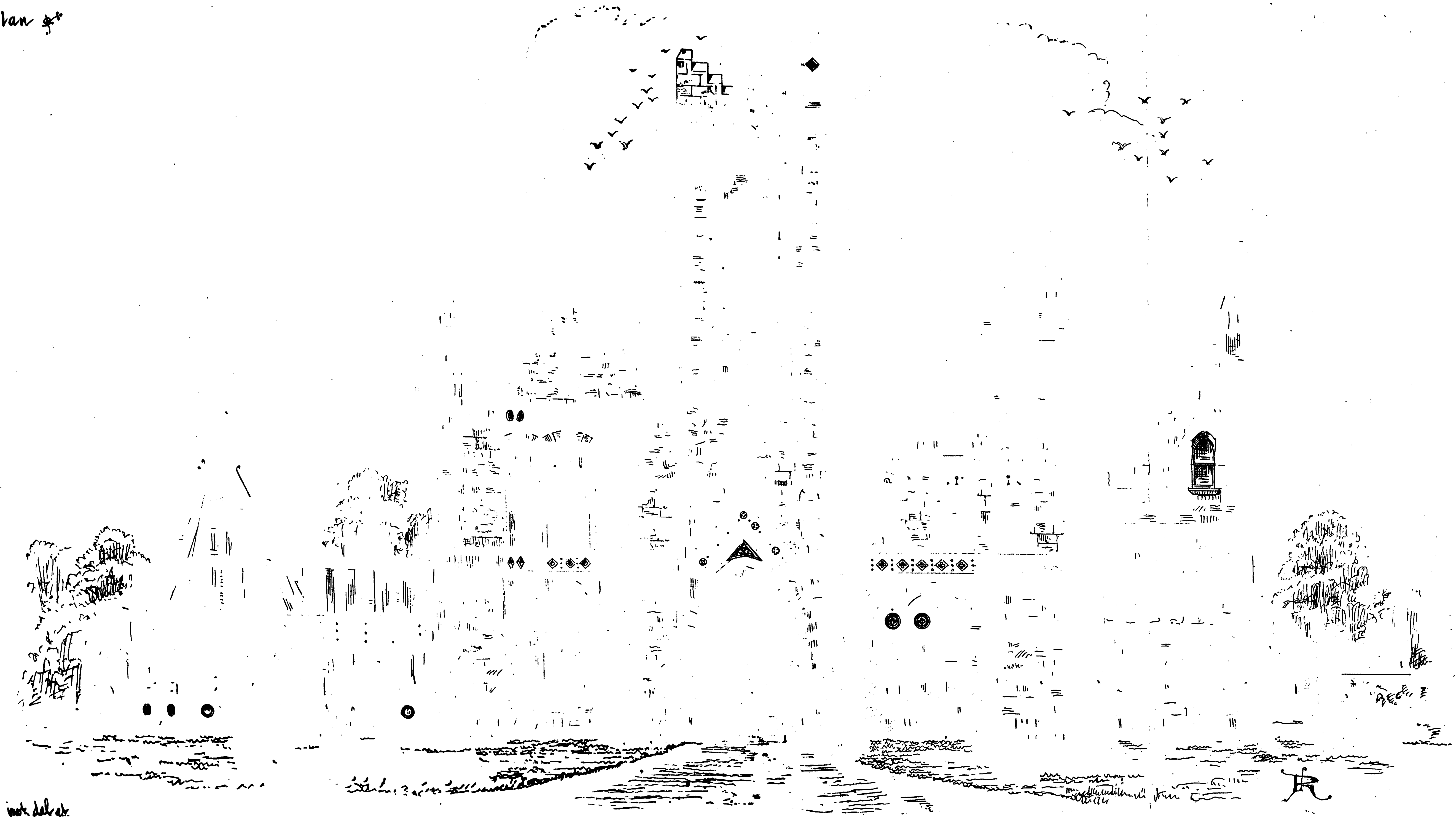
No. 260. Octr. 15th. 1870.



Ground Plan



½ Side Elevation



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Scale of

feet

JOHN W. ROBINSON. A.R.I.A.I. ARCHITECT.

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and defect by an injudicious and objectionable expenditure of means. It is well known that the lines of strain in a perfect structure for bridge purposes, pass along definable curved lines, with which it is impracticable to make the lines of ornamental parts agree, because of these lines having more of horizontal than of vertical expression; whilst the main feature lines of ornament are chiefly vertical. Therefore, if the bridge is intended to be of *first-class* excellence, and the ornamentation of *first-class* excellence, then the *strict* or *rigid* execution required in the one, and the *free* execution desirable in the other, should not be made to clash, to the detriment of both. Here are two things essentially different; the one is of prime, and the other of secondary importance. The one will be the same for the same service, no matter where placed. The other will vary with locality, surrounding objects, the taste of the landscape architect, and, it may be, the means at disposal for the purpose. The absolutely essential part lies within the engineering profession, whilst the ornamentation belongs more to the artist, whether he be sculptor or architect, depending on the character of the ornament. In the extensive correspondence which I have seen in your paper, and the reports of the Corporation on the subject, it does not appear to me that after such a "waste of time," sufficient consideration was given to the *character*, *duty*, and *office* of the bridge structure.—I remain, sir, yours truly,

C.E.

THE ROUND TOWERS AND HOLY WELLS OF IRELAND.

TO THE EDITOR OF THE IRISH BUILDER.

I stood by Swords' ruins old,
What time the setting sun was low;
Gay beams of sapphire, red, and gold,
Lit up the tower with their glow,
Gilding the arch with ivy bound,
And all the crumbling tombstones round.

And, musing there. my mind ran back
The history of a thousand years,
O'er desolation's smoking track,
'Mid flashing swords and bristling spears,
E'en to that bright and stainless page
That makes our isle's 'Augustan age.'

That was the time when she did beam
A beacon to the lettered world,
And from the shores the flashing stream
Of science o'er the earth was hurled,
Till distant regions saw the flame,
And kings and chieftains crowding came.

Sir,—Thanks to the wide dissemination of my views through the columns of your influential journal, favourable acceptance has been accorded to opinions which, a few years ago, were condemned; but, after the overwhelming mass of evidence I have adduced, not only from my own experience and information, but from the testimony of the most learned men whose studies have been devoted to the subject, conviction has at length dawned upon minds that could not formerly recognise the validity of facts now established beyond dispute. The Baal apostacy held universal sway over the earth 600 B.C. Nebuchadnezzar King of Babylon made proclamation to "all nations, tongues, and peoples" relative to his worship. The whole eastern and western world were enthralled beneath its iron grasp. Even in the time of St. Paul, when he proclaimed the sublime truths of Christianity in the temple of Ephesus, the people shouted for two hours, "Great is the goddess Diana," whom Asia and the whole world worshipped. The classic schools of Athens as well as the "purple-robed Cæsars" of Imperial Rome bowed in abject homage beneath its potent spell. We have shewn that the sun was adored as Baal or Apollo, and the moon as Diana or Astarte. We have proved from the prophets that the "high places" of scripture were round towers or pillars dedicated to this great apostacy, confirmed by the testimony of Josephus, who states that Herod built round towers at Cæsarea in honour of his friend Tiberius Cæsar, who always consulted the diviners and astrologers before undertaking any great expedition. We have the testimony of Diodorus Siculus, in the second century, that the inhabitants of Erinn had round towers dedicated to Apollo, and groves, and excelled in the use of the harp. The very names of places confirm my views: Knockgrieve, hill of the sun; Slieve-mis, mountain of the moon; Caran-tuel, in the Co. Kerry, sacred to Ceres; Baal-ard, Baal aloft; Grian Beacht, the sun's circle (all coming from Grian-Apollo); Ardmore (ard, high; more, great), the great high place; Kilmallock, molch; Clonfert, or Cluan-fert, the place of the holy well (the tower and holy well, let it be remembered, are always together); Clonmac-noise, or Cluan-mac-noise, the holy well where kings and nobles assembled.

In my last letter I shewed the close connection between the old Irish crosses and the round towers—that the sculptured emblems and representations on those stone memorials prove the existence of Baalism in this country. Now those Baal crosses, by their circular form, were intended to denote the annual course of the sun, and the serpents, wolves, hawks, and other reptiles, animals, and birds sacred to Baal and Apollo, indicate the national worship at that period, and their divinations. The Tara brooch, supposed to be at least 1,000 years old, has beautiful representations of the serpent carved upon it; so that, after all, the old tradition of St. Patrick driving the serpents (or serpent-worship) out of Ireland is a fact, confirming my views. These old crosses are an index of the divinations and sorceries which prevailed in Erinn under Phœnician rule. The Wicklow guide still points out Lough Napeastia, or the lake of serpents, at Glendalough, into which the saint banished all the serpents of Ireland when he abolished Baalism. From the round tower at Glendalough a mountain can be observed, which to this day is called "Baal's mountain"; and when lecturing there a few years ago, as the sun diffused his effulgence over its gloomy peak, one could not avoid imagining with what adoration the orb of day was welcomed by the priests when they ascended the tower, and shouted "Baal" from its summit through the four apertures facing the cardinal points; and how reverentially the poor benighted devotees knelt under the yoke of the Phœnician apostacy. Now, the high place where the high priest officiated, under the Mosaic and the false Judaic economies, was either at the true or false sacrifice; the pillar was over the sacrifice—it was always next the burnt offering; the fire lit from the top altar was brought down and put under the offering. The round tower of Kilkenny has six compartments, besides the top place or altar. The top—corona, or crown—with its celestial lamp, signified the seventh chamber, or the perfection of the entire. Nearly all the doorways face the north. The north star is closely connected with the seven stars; they divined by the stars. The door of the Egyptian pyramids faces the seven stars. The prophet Ezekiel denounces the northern as the apostate sacrifice, and in the vision he portrays the iniquities and the desolation brought on the earth by the false prophets, in terms somewhat akin to Daniel when referring to Chebar, in the land of the Chaldeans and the great apostacy. In the iii chap. Nehemiah, Eliashab the high priest built the sheep gate near the towers of Meah and Hananeel; near these towers and sheep gate was the Pool of Siloam, so that the tower, the place where the oxen were kept for sacrifice, and the holy water are all associated. Under the true and false system—*vide* Pool of Siloam, &c., the holy well was connected. Mark the same in Ireland; nearly every round tower has its holy well. On the site of Trinity College, it may not be generally known, a round tower once stood, the remains of which are to be seen in the Provost's garden; and the old archives record that a holy well was situated here in the twelfth century. At St. Patrick's, there was also a holy well; and in the old closed up churchyard of St. Michael le Pole, famous for its monastery in the olden time, a round tower reared its lofty head, the remains of which were seen by many persons living in the last and alive in the present generation; thus the tower, the holy well, and the place of sacrifice, were closely connected in this country as they were in the east; and the desolation surrounding the sites when the apostacy predominated throughout Ireland is fulfilled, in the prophetic words of Zephaniah—"The towers are desolate;" and also the prophecy of Isaiah—"The towers shall be dens for ever, a joy of wild asses, a pasture of flocks." Thus we perceive particular fountains were reverentially considered in the east; and the veneration in which holy wells are held in Ireland—such as St. John's, St. Brigid's, the well of Duach's son, St. Dolough's, &c., evince the Irish western peasantry's respect for water, which, along with fire was sacred to the Phœnicians. Dr. Lanigan and Dr. M'Dermott—no mean authorities—consider holy wells "contribute with many other proofs to demonstrate the progress of population from the east to the west," and that they are of "Phœnician origin." These few additional important facts, will, I am sure, prove interesting to your readers, in connexion with my last letter on "Irish crosses;" and, to my mind, no candid inquirer who dispassionately, and in a painstaking manner, examines the subject in the light which I present it, but must arrive at the conclusion, that the high place, (or tower), the sacrifice, and the holy well are so closely connected, both in the east and in Ireland, that they cannot be separated from the great Baal apostacy for which their edifices were erected.—I remain, sir, your obedient servant,

Caleb Palmer.

Ashbrook, Raheny, Oct. 12, 1870.

P.S.—By a misprint in last letter, "The little 'tower' in the county Donegal, near the river Erne, called Astroth," and "Aterit in the county Galway," should be "town" in both cases, and not "tower." It is remarkable that there is, at the present day, a *round tower* in the county of Mayo, in the west of Ireland, which bears the name of *Baal*.

C. P.

"THE CASTLE OF ARMAGH."

TO THE EDITOR OF THE IRISH BUILDER.

Sir,—I beg to inform you that the article inserted in your paper under the above title was written for the *Armagh Guardian*, by Mr. Edward Rogers. Another paper (a copy of which I enclose), touching on the local archæology of Armagh, has already appeared in the *Guardian*: it throws considerable light on the topography of a spot hitherto unknown to antiquaries and Irish writers.

W. Thompson.

Guardian office, Oct. 5, 1870.

[Until receipt of the above we were not aware of the facts as stated therein. The paper from which we copied it did not quote the *Armagh Guardian* as the source from which it was obtained, but merely put the addition, as given by us.—Ed. I. B.]

NOTES OF WORKS.

An extensive warehouse, with cut-stone front, has been commenced in Donegall-place, Belfast, for Messrs. Bottomley, under Messrs. Thos. Jackson and Son, architects; Messrs. T. and J. Guiler, contractors. Quantities prepared by Mr. J. M'D. Bermingham, Belfast and Dublin.

A coastguard station has been commenced at Cultra, Co. Down, under Board of Works. Messrs. J. and R. Thompson, contractors. Quantities prepared by Mr. Bermingham.

Ballyronan church, Co. Derry, was consecrated on the 29th ult., by the Lord Primate of Ireland, who preached an eloquent sermon, taking his text from the 133rd Psalm, after which a collection was taken up to assist in liquidating a debt upon the church. The beautiful organ recently built and erected by Mr. J. C. Combe, of Belfast, was used on this occasion.

The Presbyterian church, Clough, has been re-opened after undergoing extensive alterations and repairs. The works were carried out by Mr. Moore, builder, Ballymena. The cost was about £450.

ARCHÆOLOGY OF ARMAGH.

SITE OF THE BATTLE OF BELLANABOY, OR "YELLOW FORD."

The history of this battle, so interesting to the people of the ancient City of Armagh, is so generally well known that it would be "love's labour lost" to repeat it here; but as the site pointed out by local chroniclers, and authenticated by men well versed in Irish history, admits of some speculation, I shall take advantage of the doubt, and endeavour to prove that the spot so long recognised as the place where the English commander Sir Henry Bagenall fell was not at Cabragh, in the parish of Grange, but at a place near Bagenall's Bridge (called after the general), separating the townlands of Drumcullen and Tirgarve, and on the direct road to the fort erected on the Blackwater, where the English general was proceeding to meet the rebel Hugh O'Neill. In thus attempting to remove landmarks made by chroniclers and historians, as well as to doubt local tradition, the writer subjects himself to criticism; but he trusts that in pursuing this bold course it will eventually lead to an examination of facts, which may decide the uncertainty that prevails not only as to the proper site of the battle of the "Yellow Ford," but other interesting places in and around this ancient city.

In the Annals of the Four Masters, Dr. O'Donovan, under 1598, has the following note:—"The site of this battle is shown on an old map of the country lying between Lough Erne and Dundalk, preserved in the State Paper Office, London, as on the banks of the River Callan, to the north-east of the City of Armagh. The place is called Ballymackillonne, and the following words are written across the spot—

'***Here Sir H. Bagenall, Marshal of Newry, was slain.***'

The name of beal an atha buidhe—*Anglice*, Bellanaboy—is now applied to a small marsh or cut out bog, situated in the townland of Cabragh, about one mile and three-quarters to the north of the City of Armagh. Capt. Tucker, R.E., who surveyed this part of Ireland for the Ordnance Survey, has marked the site of this battle on the Ordnance map by two swords *in saltier*, and the date 1598."

A little to the north of this "small marsh," nearly opposite Watt's cottage, a white-thorn bush is *gravely* pointed out as the spot where Sir Henry Bagenall was buried, and called "the great man's thorn."

Now, to determine accurately the site of this cabhan a cath (or field of fight), it will be necessary to examine the relative positions of the contending armies, and trace their movements until they meet in deadly array on the field of battle. It will then be seen that the correctness of identifying the "small marsh" or triangular field in Cabragh (goatland) as the place where Sir Henry Bagenall was killed, admits of strong doubts, both from its being a great distance from the rivers Blackwater and Callan, as well as not being in the direct road to the "New Fort" on the Blackwater, where the English general with his army were marching to meet the O'Neill, who was then laying siege to that garrison.

On the way from Armagh to this fortress (which according to Moryson was only a deep trench or wall of earth to lodge one hundred soldiers), within a short distance of the rivers Callan and Blackwater, lies a spot in the townland of Drumcullen which the tradition of the place points out where Sir Henry Bagenall fell. Several bullets and other implements of war are said to have been found in the locality. The fact of a bridge, too, being called after the general gives strength to the belief that this place has superior claims to Cabragh, which is in another direction, and, in fact, leading to the unhistoric village of Loughgall.

Mr. M'Keough, who resides close to this bridge, informed the writer, in presence of many of his neighbours, who concurred with him, that about 30 years ago he saw several large sepulchral mounds, in the levelling of which many human bones, gun-bullets, and other materials of war were discovered. It is also the common impression that as the Earl of Tyrone took possession of the common road, which was terribly trenched up, as hereafter described, the English soldiers retreated to Armagh by *Cabragh* through a lane which still retains the name of the "bloody loaning." The great slaughter which took place here very probably gave rise to the idea entertained by many as to the site of the Battle of Ballinaboy, and Captain Tucker in turn stereotyped the tradition on the Ordnance Survey maps.

Let us now review the history of the whole transaction, and return a true verdict according to the evidence.

Blackwatertown is situated on the old road from Armagh to Dungannon, and on the River Blackwater, from which it takes its name. During the rebellion of the Earl of Tyrone, in the reign of Elizabeth, an English garrison called "New Fort" was placed here to check the incursions of that chieftain, who, under a plea of some injuries done to his party by the English, in 1595 attacked and expelled the garrison and obtained possession of the fortress, which he subsequently destroyed and abandoned on the approach of Sir John Morris. In 1596 the earl covenanted to rebuild it, and to supply an English garrison to be then stationed in it with all necessaries, as one of the conditions upon which peace was granted to him by Elizabeth the queen. In the following year the English forces, under Lord Deputy Borough, assaulted the place and easily took possession; but the insurgents soon reappeared and commenced an attack; and though the further progress of the war was prevented by the death of the general, yet a strong English garrison was stationed here as a frontier post. Tyrone was once more compelled to agree to repair the fort and bridge, and to supply the garrison, but he shortly after attacked the former with the greatest vigour; and as the works were probably weak and imperfect, the assailants were repulsed only by the determined valour of the garrison. The earl afterwards attempted to reduce it by famine; and the besieged were driven to the last extremities, when Sir Henry Bagenall, with an English army of about 4,000 infantry and 600 cavalry, marched to their relief with a large quantity of provisions. Marching through Drogheda, Dundalk, and Newry, they at length arrived at Armagh, where they remained all night. When O'Neill, who was besieging the fort on the Blackwater, had received intelligence that this great army was approaching him, he sent messengers to O'Donnell, urging him to come to his assistance. O'Donnell proceeded immediately with all his warriors and a strong body of forces from Connaught to assist his ally against those who were marching against him. The Irish of the province of Ulster also joined the same army, so that they were all prepared to meet the English before their arrival at Armagh. They then dug deep trenches against the English in the common road, by which they thought they (the English) would go to meet them. (Where?)

After remaining a night in Armagh, the English rose next morning early, formed into order and proceeded straight forward in solid bodies, till they came to the hill which overlooks the ford of beal an atha buidhe—*i.e.*, the mouth of the Yellow Ford.

It is unnecessary to state that the queen's soldiers suffered a heavy defeat, and from the preceding account we may infer that the site of the battle lay between Armagh and the fort on the Blackwater, within a short distance of Blackwatertown.

This battle is thus described in the "Montgomery Manuscripts," edited by Rev. John Hill (Belfast, 1869)—"The victory of Hugh O'Neill over the English at the *Blackwater*."

The fortress was immediately surrendered to the enemy, and the English soldiers then were, by mutual conditions, permitted to return to Armagh; the fort, however, was soon afterwards recovered. Opposite to the town (Blackwater) are vestiges of a fort, by some called the Blackwater Fort, in the attempt to relieve the garrison of which Sir Henry Bagenall lost his life; and others, less informed,—supposed to have been the strong fortress of Hugh Earl of Tyrone, and one of those for which he stipulated when he obtained a patent of favour from Queen Elizabeth. Now the chief mansion of the Earl of Tyrone was not at this place, but at Dungannon, and had a strong fort. To prevent confounding the garrisons of Blackwater and Charlemont, I may mention that the latter was erected by Charles Blount Lord Mountjoy, Deputy of Ireland, in the year 1602, as a curb on the Earl of Tyrone.—E. R., in *Armagh Guardian.*

THE "CAPTAIN."

It is now more than three weeks since the sad news spread over our land that we had sustained the loss of one of our finest and latest specimens of naval architecture; but the feeling of distress, almost of dismay, has hardly passed away, and it will need a master-hand to guide us, lest we should fall into the grievous error of condemning one of the greatest improvements of modern times, instead of calmly considering in what manner we may have been guilty of any shortcomings whilst endeavouring to construct one of the most effective of war-ships. That the *Captain* was as efficient a fighting-ship as she has received credit for being there cannot be two opinions. Still, as the sequel proves, a ship must have other qualities besides keeping out the enemy's shot whilst at the same time causing the greatest possible amount of destruction to her opponent. We would almost wish to avoid giving an opinion on the merits or demerits of the turret system for sea-going purposes, at least until a full, and as far as the survivors can afford us, an authentic, statement has been given of the disaster that has happened to the *Captain*. It has been suggested, however, that until the turret-ship is proved to be a most satisfactory sea-going vessel, *i.e.*, capable of sustaining all contingencies of ocean cruising, these vessels should not be used for other service than for simple coast defence. Engaged in that capacity, there is but little doubt there does not exist a vessel afloat that can successfully compete with the ship constructed on the turret principle, either as regards offensive or defensive power. We will not say we quite agree with this opinion; still, we feel there would be this advautage—that we should in the meantime become better acquainted with a comparatively new kind of ship, as regards the effects of the elements upon it. With reference to the so-called prejudice of certain members of the present board of Admiralty against the turret system as exemplified in the *Captain*, we will say little, but leave to our readers to decide whether the prejudice wás well or ill-founded. It is an old saying, and a very homely one too, that "the proof of the pudding is in the eating," and we may with equal truth assert that the soundness of any principle of shipbuilding consists in the fulfilment of the very first principles of that art—viz., those of buoyancy and stability. We fear in these days that the controversy of guns *versus* ships has monopolised too much attention—to the great detriment of the true qualities of the ship. So long as the latter could be made strong enough to resist the shot of the heaviest known gun, and in return give as hard a knock as she received, so long was it imagined all was progressing favourably; and it is only when a great calamity, like that we have lately experienced, comes upon us, we begin to suspect we have been sacrificing the vital properties of the ship for the sake of guns and armour. And thus we think we can trace the true weak point in the *Captain's* construction. In the first place, it is considered she lacked *buoyancy*, inasmuch as it was proved she was several hundred tons (900) heavier than was intended, and consequently floated about two feet deeper than was designed. True, much has been said for the purpose of showing that this error would not materially alter her sea-going qualities. But here we beg most respectfully to differ. For it will not be asserted for one instant that a ship designed on certain lines, and to be of proportionate tonnage, shall be an equally good sea-going ship if she is found to be of a thousand tons greater or less displacement. True, it may be possible to modify the results of this departure from the original design by a careful trimming of the ship, but the radical error will still exist.

In the second place, as the sequel proved, the *Captain* lacked that *stability* which all ship-builders know the inestimable value of, inasmuch as it implies the capacity of a ship to right herself when disturbed from an upright position, and should never, under the action of wind and waves, or other disturbing causes, deviate further from that position than is consistent with safety; and also that her movements should not be so extensive, nor so abrupt, as to strain or damage her structure. We have heard much of the good opinions and great admiration expressed as to the general behaviour of the *Captain* prior to her last cruise, and we would be the last to say aught in her disparagement, for we have already spoken in the highest terms of her capabilities. Still, we cannot forget that certain faults in her construction were pointed out, and that those faults, so far as is at present known, were not remedied before starting on her fatal cruise. If we remember rightly, the two 120-pound chase guns were strongly objected to. Also, serious objections were raised with reference to her masts. Again, with reference to her hurricane-deck.

Now, may we not, in conclusion, be allowed to ask, how it came to pass that the opinion expressed in Admiral Symond's able report, in which he condemned the *Captain* as a sea-going cruiser, was so little heeded? Surely if advice is sought of those capable of giving it, the least that can be done is to seriously consider the reasons urged in support of that advice.—*Broad Arrow.*

RAILWAYS IN INDIA.

The *Times* correspondent, writing from Bombay on the 7th ult., says:—I have just made a rapid run across India, from Calcutta to Bombay, in 62 hours. The time occupied by the mail trains at present is 68 hours, but in a few weeks the opening of the Chord line of the East India Railway will reduce the time to 64,—a little more than two days and a-half. All the arrangements are admirable. On both the Great Indian and East Indian lines the mail trains run at 25 miles an hour with great punctuality. The refresment-rooms are wonderful for India, but the careful traveller can always make himself independent of them. The sleeping carriages for the first-class on both lines are comfortable enough, but those of the Great Indian are superior to the other lines. Were the second-class carriages of the East Indian Railway Company half as convenient as those of the Bombay line, I would recommend all gentlemen, at least, to use them. They are cooler than the first-class, and the charge is just one-half. From Bombay to Calcutta the first-class fare is £15, and the second-class half that, but the charge for luggage is heavy. The great rush of passengers through Bombay to all parts of India is just beginning, and, on the whole, the railway companies are prepared for it. Even at present ladies may travel comfortably, and in India one soon becomes accustomed to long journeys. But in a few months American palace cars will be placed on both lines, when the journey will be almost luxurious for those who care to pay a slight addition to the first-class fare. Passengers landing at Bombay in the morning may take the mail train at noon, thus avoiding hotel expenses. Those who must spend a night in Bombay or desire to see the island will find improved hotels. A gigantic iron structure is nearly finished on the Esplanade, having cost £70,000 already. It stands midway between the Apollo landing pier and the Boree Bunder terminus, and is in the centre of the new city, of which it is hardly worthy. All train arrangements have now to be made to avoid traffic on the Thull Ghaut at night. There is little risk, but one serious accident has already occurred. In the library and reading-rooms of the Asiatic Society, in the Town Hall, and in the fine institute which bears the name of the Jew merchant prince, Sassoon, near the hotel, the visitor will find all the most recent periodical literature, both Indian and European.

I was enabled to anticipate the opening of the Chord line, and to run along it at the rate of 30 miles an hour, by the courtesy of Mr. Perry, of the contractors' firm of Messrs. Brassy, Wythes, and Perry. There is no reason, so far as the contractors are concerned, why the line should not have been opened months ago. It is in a much more forward state than the portions on either side which the East India Railway Company are doubling, and even than the Jubbulpore section of the Great Indian line which Lord Mayo and the Duke of Edinburgh formally opened last March. The marvel is that the line has been finished so soon in the face of such obstacles, physical and administrative. Almost all the labour had to be imported, cholera more than once scattered the gangs, and tigers carried off many a workman in the jungle country. The works display the finest and heaviest rock-cutting in Eastern India, almost worthy to be ranked with that of the Thull and Bhore Ghauts in the Bombay Presidency. Of the 123 miles of trunk line, no fewer than 40 consist of deep rock cutting. Leaving Seetarampore on the way to Bombay, the country differs little from the undulating coal deposits of Raneegunge till the first three stations of Meeja, Jamtara, and Seetacotta are passed. Soon we approach the heavy embankments and cross the fine bridges which span the Jyntea and the Puttro tributaries of the Adjar river, now swollen by the season's rain. To the north the Beerbhoom Hills, the last out-crop of the Vindhya range which crosses India, tower aloft. To the south is the grand trunk road, with the little sanitarium of Parisnath, sacred to the Jains, rising suddenly from the jungly plain. We reach Mudoopore, the changing station for the Kurhurbalee coalfields, 24 miles off, and for Parisnath, 16 miles to the south of the branch terminus. It is to be regretted that so little has been done at Kurhurbalee in raising coal or preparing the shafts and machinery. Until a railway has been opened at Darjeeling, it is likely that this part of the country, and especially Parisnath, will become a retreat for invalids and holiday-makers from Calcutta, as Matheran is from Bombay. We are now in the Santhal country, the scene first of rebellion, provoked by our own folly, and then of mutiny. We cross the Adjar on a bridge of ten spans of 84 ft., with piers resting on rock 40 ft. below the bed of the river, pass Rohinee, where Macdonald fell a victim to the native cavalry, and reach Byjuath, three miles from the sacred shrine of Deoghur, to which so many pilgrims flock. What a change has passed over the country, from Rajmahal to Deoghur, since the local rebellion of 1856! Sir G. Yule's patriarchal administration, followed by the two railways, has delivered the simple Santhals from the bonds of the Bengalee usurer, although they still consider it both prudent, as a precaution against years of famine and a sign of respectability, to keep their names on the money-lender's books for a few rupees. Cultivation has greatly extended in the last few years, for the people are becoming comparatively wealthy, and they have now found markets for their produce. They are crying for schools, too, and the missionaries are fast converting whole villages of drunken and unchaste peasants into good Christians. We leave the picturesque Santhal country for the plains of Monghyr, by the Nargunjoo Pass, a magnificent cutting of 5 miles, on which for four years some 5,000 men have been daily engaged, and 240 lbs. of powder have been daily used. At this season the whole pass resounds with mimic waterfalls. It is green from the summit, and ends in a pretty lake, which the engineers are turning to good use. We soon dash through the changing station of Newadee, through Mulleepore and Etone, to Lukeeserai, and catch the mail train, which has been so much longer on the road. It is not probable that this Chord line will add to the shareholders' dividends for a long time, if, indeed, it does not diminish them at first. But it has opened up a fine country teeming with mineral wealth and with endless agricultural resources. The line has been as solidly constructed as any in India, for at the close of a season of heavy rain the new embankments and bridges were perfect.

CARLOW DISTRICT LUNATIC ASYLUM[*].

In another column we publish a report of Doctors Howlett and O'Meara upon the state of the Carlow District Lunatic Asylum. The report was, we believe, ordered by the Board of Governors to be printed "for the information of the ratepayers," but though the physicians have performed their task with ability they have not given us any new information of importance. They have in a brief and lucid manner said all they had to say, but all they could tell us of the asylum has been told before. The house was originally built to accommodate 104 patients, but there are 180 insane persons confined therein. A series of makeshifts have been resorted to in order to afford the necessary accommodation. Eight bath-rooms have been converted into sleeping apartments; the room intended for an infirmary at each side of the house has been converted into an associated dormitory; a large room built for a straw-house has been boarded, a fire-place furnished, and converted into another dormitory. From the report it would appear that these rooms are suitable for the purposes to which they are now used. Strange to say, however, the report does not inform us whether new bath-rooms have been provided in place of those converted into dormitories. In such an institution as a lunatic asylum proper bath-rooms are essential to the comfort and health of the patients, and the board of governors has been guilty of most culpable negligence if it has not provided new lavatories instead of those converted. Throughout the report we can perceive a desire to prevent the establishing of an asylum in Kildare. The Carlow asylum, it is urged, is in a most convenient situation, and in case the counties separated, the cost of each patient in the Kildare asylum would be upwards of £8. This argument is one of considerable importance to the ratepayers of Kildare. We believe, however, that no charitable man will hesitate to pay the additional cost, if the Board of Governors of the Carlow asylum do not take steps to have the asylum enlarged, so as to afford accommodation for additional patients.

REPORT.

"In compliance with instructions received at the last meeting of the board, we beg to submit the following report for the consideration of the Governors:—

"In the year 1831 the Carlow District Lunatic Asylum was opened for 104 patients. No additional dormitories have since been built, but accommodation for a larger number of patients has been provided in the following manner:—A bath-room in each of the eight corridors has been converted into a sleeping apartment. The room intended for an infirmary at each side of the house has been converted into an associated dormitory. These rooms would accommodate seventeen patients each, affording 500 cubic and 50 superficial feet of space to each patient. A room attached to female refractory ward accommodates four patients. A large room built for a straw-house has been boarded, a fire-place furnished, and a door opened from it into No. 1 male ward. This dormitory allows for sixteen patients the same amount of superficial and cubic feet of space above-mentioned for each patient. At the male side of the house there is accommodation for 95 patients—we have at present 115 male patients. The female side of the house would accommodate 83 patients—there are at present 65 female patients in the asylum.

"In accordance with instructions received from the board the physicians furnished a report to the governors on the 20th December, 1854, specifying the additions and improvements required in the asylum at that period. In consequence of the projected separation of Wexford from this district further action on the report was postponed until the Wexford patients would be all removed; such removal did not take place until 1868. In January, 1868, an act of Parliament came into force, the effect of which could not have been anticipated; the consequence was the house at the male side became suddenly overcrowded from the goals and by committals. It became immediately evident that an enlargement of the asylum was necessary, and a resolution was adopted by the board of governers at a special meeting on the 8th Februsry, 1869, requesting the board of control to direct their architect to furnish plans and estimates as follows:—No. 1, day rooms and associated dormitories for 100 additional patients. No. 2, dining hall and additions to kitchen and laundry, comprising bath-rooms, privies converted into water-closets, and repairs on the roof of the main buildings. No. 3, re-arrangement of system of drainage of the building, new main sewer, and relaying subsidiary sewers.

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[*] From the *Leinster Express.*

"After these plans and estimates had been considered by the board of governors, a resolution was adopted on the 28th of June, 1869, as follows:—'Resolved, that application be made to the Lord Lieutenant in Council for an advance to the credit of the Carlow District Lunatic Asylum, for a sum of £2,500 for carrying out additions and alterations approved of by the board of control, as well as other improvements.' These alterations and improvements are at present in progress, but do not provide accommodaton for additional patients. We, therefore, beg respectfully to submit to the board of governors the immediate necessity for such additional accommodation at the male side of the asylum. With regard to the main building, it has been reported by the architects who valued the house, for the purpose of awarding compensation to Kilkenny and Wexford counties, that the house was originally well constucted and is at present in good repair. For any plans of enlargement that may be adopted we beg to state there is ample room, the grounds at present owned or rented by the asylum, and immediately surrounding it, amounting to 39 statute acres.

"Taking the counties of Carlow and Kildare as a district, the asylum is most conveniently situated; it is nearly in the centre of a line running north and south, with a railway running through the whole length of it. The asylums of the neighbouring counties, each of which comprises one district, are not so conveniently situated; and while the extreme portion of the Carlow district is 40 miles from the asylum, it is considerably more in separate counties that form one district, and have not a railway, being so much as 80 miles in one or two instances. Although the Carlow asylum is one of the smallest in Ireland, and the establishment charges therefore proportionately large, the annual cost of each patient is less than in almost any other asylum, while the deaths and recoveries will bear favourable comparison with the general average of Irish asylums. At several periods, when epidemics prevailed in the town and neighbourhood, the asylum remained free from a visitation. At the time cholera existed close to our door in 1849 and 1866, there was not a single case among the patients of the asylum The inspectors in their reports have invariably commented favourably on the health of the inmates.

"Having been requested by the board of governors to express an opinion as to the probable cost per patient that might be found necessary, in case the counties were separated, and each had a separate asylum, the physicians beg to state that in consequence of the expenditure necessary under those circumstances for *a double staff of officers and servants, and other causes, the cost per patient would be much increased—amounting to £8 additional in Kildare per annum for each patient, and something more than that for each patient in the Carlow asylum.* (Signed),

"Thomas O'Meara, M.B., Visiting
Physician to the Asylum.
"M. P. Howlett, Resident Medical
Superintendent."

CRANNOGS IN DRUMGAY LAKE, NEAR ENNISKILLEN.*

There is, perhaps, no district in Ireland more rich in lakes and lakelets than the county of Fermanagh. The whole territory, indeed, would seem at no very remote period to have been a wilderness, through which the Erne, river and lake, wound its course from Belturbet to the Atlantic Ocean, a distance of about sixty miles. Now an examination of any good map, referring to the shores of Lough Erne and the adjoining districts for a short distance inland, will satisfy an inquirer that the name of the "Lake Country," so often applied to Fermanagh, has not been derived from the course of the Erne alone. Sheets of water, or marshes once lakes, varying in circumference from a rood to a mile or more, are to be found upon almost every side. These inland lochs may be considered as stations along the main line. At a period when the whole neighbouring country was one mass of wood, they served as tolerably secure retreats; and no doubt within their islands, natural or artificial, the work of the artificer in wood, bronze, iron, and even in the precious metals, was carried on. In such an island at Lagore, near Dunshaughlin, in the county of Meath, many hundreds of pins of bronze, bone, iron, and wood were found, together with countless swords, spearheads, axes, knives, combs, brooches, crucibles, unmanufactured pieces of bronze and iron, &c., &c. The same remark applies to the great crannog found at Ballinderry, near Moate, and to a similar work at Strokestown, in Roscommon, where some of the most exquisitely finished brooches and other remains were turned up during the bone grubbing operations which followed the partial drainage of the lake, and the consequent discovery of "the island." That the crannogs were not merely widely moated forts, but were occasionally at least the scene of mechanical and artistic industry, often of a very refined kind, may be inferred from the character of the remains so frequently found within or around them, amongst which half-finished articles, lumps of unworked metal, crucibles, and "slags," are conspicuous. Hitherto, as far as I am aware, the crannog "finds," as reported, have generally consisted of objects composed of stone, bone, wood, or metal. Of specimens of early fictile ware, except of that class represented by sepulchral urns, we unfortunately possess but few examples. It is, therefore, with a feeling of pleasure I am able to lay before our association some portions of vessels which belong to an early period of society in this country, and which I believe to be unrepresented in any collection of antiquities.

At a distance of about three miles and a-half north of Enniskillen, and within a quarter of a mile of the northern shore of Loch Erne, occurs the lake of Drumgay (the Ridge of the Geese)—a sheet of water about a mile in length, and half a mile in its greatest breadth. From the centre of this lake to the monastery on the famous island of Devenish would be a distance, "as the crow flies," of about one mile. The lake, which is completely landlocked, is dotted with three small islands, well wooded, but otherwise presenting no picturesque feature. On several occasions, when travelling by the railway which skirts the water, I had been struck by their appearance, and considered them well worthy of examination. It was not, however, until I had heard that the largest of the islands was described as the "bone island," that I determined upon making an examination of their character. Mr. Bourke, a gentleman residing in the neigbourhood, and an enthusiastic antiquary, subsequently excited my interest by informing me that it was quite true that at least one of the islands was literally surrounded with bones of animals, such as deer, oxen, pigs, &c. He had visited the place, and had already made a collection of pieces of pottery which lay amongst the bones and decayed timbers, along the shores of at least two of the crannogs.

Of these singular islands, the largest is probably the most perfectly preserved crannog extant. It is composed of wood—oak, ash, and pine—all laid in rough blocks, as it were radiating from a centre to the edge of a circle formed of stakes set in the ground at a distance of about four feet asunder. These stakes are of about the thickness of a man's arm, and the space enclosed by them is about forty feet in diameter. The surface of the crannog is generally covered with stones, earth, and brushwood; but, owing to the action of the water during winter time, many portions of the timber work are laid bare. A stone quay, now all but completely ruined, appears to have been constructed on its southern side. A second island, situated near the northern shore of the lake, is of perfectly similar construction. It is remarkable, however, as possessing a very curious stone, about two feet in length, and about three inches in thickness. This curiously decorated stone was probably intended as a tombstone, to be set up in the neighbouring cemetery of Devenish. It is not likely that there had ever been an interment upon this islet. A third crannog, of which only a small portion at present remains above the summer level, occurs upon the north-eastern shore of the lake.

Scattered amongst the bones which lay upon the shore of the largest island, were pieces of earthen vessels of very singular appearance, several specimens of which were secured by Mr. Bourke and myself. Of these I am enabled to lay a few characteristic examples before the society. One is a portion of what had been a large and well-formed vessel, with ears at the sides. It is ornamented at the top of the rim with a pattern very like that found upon several silver bracelets preserved in the Museum of the Royal Irish Academy, and which have been referred by Worsaae to the Danish period. The neck is short, and the sides are decorated with indented lines, about one inch in length, and laid diagonally. The diameter of the vessel at the mouth was about eleven inches.

I send for exhibition a portion of a similar crock of somewhat smaller size than the former. It is decorated in much the same style, though the pattern is more minute. Also another example, smaller and less massive, together with three portions of one vessel, which is ornamented in the same style. I also lay before the meeting a portion of a vessel like that last alluded to, but thicker, and having a more slender ear. The meeting has before it another example, very thin, and ornamented externally and internally with sloping indentations. I also forward what is probably a fragment of a crucible. A small chisel-shaped stone was picked up upon the northern shore of the large island. Its character as an antique work of human hands is not very decided.

DROGHEDA.

The arbitrators appointed to settle the dispute between the Boyne Harbour Commissioners and Mr. T. P. Cairnes, in the matter of injury caused to his brewery premises by the falling in of the river boundary wall, have given in their award as follows:—

"In answer to the first question submitted to us—namely, 'To what cause is the injury that has occurred to the quay wall along the brewery premises and other attendant damages to be attributed?'—we find that the dredging was the immediate cause of the damage. And in reply to the second question—namely, 'Are the Harbour Commissioners responsible for all or any part of the damage that has resulted, and, if so, to what extent are the Harbour Commissioners to indemnify Mr. Cairnes for his loss, and in what way?'—we consider the Harbour Commissioners accountable in a certain degree, and consequently award Mr. Cairnes a sum of two hundred pounds (£200) as full compensation for the damage caused by the said dredging. Which we certify this 26th day of September, 1870.

"Wm. Whitworth, } Arbitrators."
"Robert Morton, }

At the subsequent weekly meeting, when the award of the arbitrators came up for adoption, Mr. John Morton said that when he heard of it he was certainly taken by surprise, for he did not expect any award of the kind. However, they had no right now to call it in question. They were bound by the arbitration; but it would have been more satisfactory if the arbitrators had given the reasons on which they based their decision. He would like to know, first, how they saddled the responsibility on this board. Was it because the board complied with Mr. Cairnes' request and ordered the dredger to deepen a berth for his special use? Did they render themselves liable by compliance with his request? The second point on which he would like information was, what blame, if any, attached to their engineer, Mr. M'Cartin? He believed the award was generally looked upon through the town as a vote of censure on Mr. M'Cartin. In his (Mr. Morton's) mind it was a direct charge against him; and, though he respected the arbitrators very much, he did not believe, after studying the matter as attentively as either of them. that any blame attached to the engineer. He had only done what the board had desired and wished him to do, and if he had done less it would not have satisfied the parties who asked to have the dredger set to work at that place. He believed that Mr. M'Cartin deserved no censure whatever. The arbitrators, wisely perhaps, did not give their reasons for awarding £200 to Mr. Cairnes. He would like to know how they fixed upon that sum; because he would undertake to build on the same foundation a wall as good as the one that fell for £65!! That, however, was a matter of opinion; but he could not refrain from saying that it would have been more satisfactory if the arbitrators had given the grounds upon which they rested their decision.

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* Read at Meeting of Royal Archæological Association of Ireland, by W. F. Wakeman, Esq.

[We are glad to find that this affair has been so quietly settled, and without a recourse to the tedious and expensive process of a lawsuit. We are aware that public bodies in Drogheda have frequently had their revennes considerably reduced owing to the payment of costs in actions which they (unwisely perhaps) thought proper to defend.—Ed. I. B.]

SOCIAL SCIENCE.

The *Mayo Constitution* has very judiciously transferred to its columns our article in last number entitled "Social Science, and what it teaches." We hope the local "powers that be" will "read, mark, learn, and inwardly digest" the valuable hints we gave therein, and that our contemporary will at no distant period be enabled to write in a more hopeful strain respecting the sanitary state of his town, than is contained in the following:—

"CASTLEBAR TOWN COMMISSIONERS."

"Again and again we have to complain that the usefulness of this body is practically *nil*. The streets are dirty. We are without water, and, worse still, the town is in a state of the most deplorable filth! Going down the main street, more especially the lower part of it, a stench, which is absolutely sickening, prevails. The sanitary officer states he has no funds at his disposal to carry out his duties effectively. Be that as it may, we must raise our voice against the present state of things, as, if it be not speedily remedied, we should not be surprised at the outbreak of fever, or some other epidemic which, if it once came amongst us, would commit fearful ravages, fostered by the uncleanliness which prevails."

LAW.

THE SMOKE NUISANCE.

The Corporation had summoned Mr. Edward O'Farrell for the existence of a nuisance injurious to public health, caused by the smoke issuing from a chimney in connection with his printing works at the office of the *Evening Post* in Suffolk-street.

Mr. James Boyle, Inspector of Nuisances, gave evidence in support of the charge contained in the summons.

Mr. Lucas, hairdresser, said that he lived near the defendant's premises, and received considerable annoyance from the smoke.

Mr. J. O. Byrne, barrister, on behalf of Mr. O'Farrell, said that nothing further could be done than had been already performed. The chimney existed in its present state for the last 26 years. It was 20 feet above the roof of the building, and they were required to raise it 18 feet more, but the chimney would not bear the weight. However, if a fortnight were given, he would do all in his power to abate the smoke.

Mr. Walpole, linen draper, said that he lived in a neighbouring house, and from the intense smoke he could hardly ever open his house for ventilation, and the smell also was *almost intolerable.*

Mr. Boyle—I really must ask your worship to make an order for the abatement of this nuisance.

Mr. Dix—I shall not make any such order, Mr. Boyle. Mr. O'Farrell is willing to do all he can for the comfort of his neighbours. He only asks a fortnight for doing so, and it has never been the custom of this court to do anything harsh in the first instance, and without giving the defendant an opportunity of complying with the necessary regulations. I shall let the case stand for a fortnight.

BOOKS RECEIVED.

Ardfert Cathedral, County Kerry. Drawn and Lithographed by A. Hill, B.E., A.R.I.B.A. Cork, 1870.

The first part of Mr. Hill's magnificent folio work, illustrating the "Ancient Architecture of Ireland," has been received. It comprises ten sheets of lithographs and six beautiful photographs, besides letterpress descriptions. Mr. Hill informs us that "the signification of the name Ardfert is either 'The Hill of Miracles,' or 'The High Place of Ert,' according to different writers, Ert, or Ercus, being a celebrated bishop under whom St. Brandon studied when a youth; St. Brandon, who was a native of this part of the country, and to whom the Cathedral is dedicated, was born in the year 484, and died on the 17th of May, 577." The part before us is well "got up" by Messrs. Kell, Bros., London. It will be followed by others illustrating the Celtic churches of Kilmalchedar, near Dingle, and of Templenahoe, Ardfert.

The Journal of the Royal Historical and Archæological Association of Ireland.

The July part of this excellent publication is to hand. Amongst the papers in it are continuations of "Sir Edmund Butler of the Dullogh, Knight," and "Memoirs of Gabriel Beranger." The wood-cut illustrations (by Oldham and Hanlon) are well executed.

TENDERS.

For a Wesleyan chapel, school, and sexton's house at Holywood, Co. Down. J. Kendall, architect. Quantities supplied by Mr. J. M'D. Bermingham:—

Nimick, Holywood, ...	£1,553	0	0
Gray, ditto	1.599	11	6
Morrow, Belfast	1,639	0	0

The tender of Mr. Nimick was accepted.

FALL OF HOUSES IN THE CITY.

Considerable alarm was created in the neighbourhood of William-street on the morning of the 22nd ult. It appears that about one o'clock an occupant of one of the top rooms of No. 36 was awakened in consequence of a quantity of plaster falling on his bed; he next heard the roof cracking, and gave the alarm to the other inmates. In a short time the roofs of 36 and 37 gave way, dragging with them the floors and their contents. The work of destruction, however, was not so rapid but that the tenement holders had time to escape, *en deshabile*, without injury. Judging from the external appearance of these houses, a passer-by could have little idea that their interiors were in such a rotten state. We hope that this occurrence, which has, providentially, been unattended by the loss of life, will induce our civic authorities to study the provisions of "The Dublin Improvement Act," in which they may discover whether they have any power conferred upon them in the matter of "dilapidated dwellings" in the city. Have we not a "City Engineer" and a "City Architect?"

Wednesday morning, at an early hour, a stable-loft, in which a quantity of hay was stored, at the rere of 15, Upper Gloucester-street, fell through, crushing four horses which were standing underneath, killing one and carrying the others to the cellar below. The three remaining animals were extricated during the day, and had sustained but trifling injury.

MISCELLANEOUS.

One of the most interesting discoveries of an archæological and artistic kind which we have of late been able to record was made the other day in Worcester Cathedral, when, in course of replacing the pavement of the Lady Chapel, one of the three slabs which lie in front of the altar in the extreme eastern bay of the cathedral was removed. This lies on the north side, and has been supposed to represent William de Blois, Archdeacon of Buckingham, whom Guala the Legate intruded to the See of Worcester in 1218. De Blois held office till his death, in 1236. He is believed to have been interred on this spot, so appropriate as the grave of one who built, or, at least, founded the eastern portion of the church. The effigy, which is reputed to be the oldest of the episcopal order in the cathedral, is in low relief; shows the deceased wearing the low mitre, amice, chasuble, morse, and other episcopal vestments and decorations. Next to this effigy lies another which is presumed to represent either Bishop Brian (1352-1361), originally of St. David's, or Bishop Lynn (1368-1373). Next to this lies the effigy of Bishop Walter de Cantilupe (1237-1266), De Blois's successor in the see. The slab ascribed to the grave of De Blois being removed, an interment was found in an episcopal dress, the character and decorations of which do not agree with those of the effigy and the date in question. These vestments comprise embroideries which, with others, represent, SS. Paul, John, Andrew, James, Bartholomew, Daniel, Adelbert, and Nicholas. The names of the saints are inscribed in Latin. There are also an *Angus Dei* and other decorations. The coffin appeared to have been opened before, when probably some of the contents were removed.—*Athenæum.*

New Post-Office Arrangements.—The Marquis of Hartington, who is not generally held to have laid the public under any great obligation by his management of the Post-office, has conferred a boon of singular worth on one section of the community by his most recent instruction. Tradesmen may now send their invoices for the halfpenny stamp if not enclosed in envelopes. The permission is of value altogether beyond the mere money concession. A new system of "dunning" opens to view. For the nominal price of one shilling a creditor may purchase the unspeakable satisfaction of proclaiming to the domestics and others interested in the private affairs of the luckless wight who has neglected to settle some small account, the precise amount of his liability, by every post for three or four days. or every morning for a forthnight. The idea is grand.

The Council of the Royal Archæological Institute have accepted the invitation of the Corporation of Cardiff to hold the annual meeting for 1871 in that town. The Marquis of Bute will preside on the occsion.

Amœna et Utilia. — A watch is an almost indispensable appendage, both to the gentleman, the artisan, and the laborer, and the same perfection of workmanship and accuracy in its movement is requisite for the one as the other; the only difference being in its outward appearance, to suit the avocation and position of the purchaser. Those manufactured by Mr. Benson of Old Bond-street, and Ludgate-hill, have gained great favour with the public on account of their strength and durability (such, in fact, as can only be found in a watch of English manufacture), their beauty and neatness of design, and the perfect finish which characterises every article produced by him, whether the price be five or two hundred guineas. Any one who has but once worn an English watch, would, we feel certain, abjure the use of a foreign one, as being inferior in every respect to the former. We would therefore recommend this article to the attention of merchants and shippers, as one well worthy of their attention, and certain to meet a ready sale in all foreign ports and British colonies."—*Standard*, October 4th.

NOTICE.

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The Irish Builder.

Vol. XII.—No. 261.

Sewage Irrigation—A Sanitary Lesson.

ORDINARY Irrigation is as old as the Pyramids, and almost coeval with the flow of the Nile. Though we read of its application to land by the early Chinese, Egyptian, and other Eastern nations long centuries before the practice was adopted in Western Europe, yet the practice does not appear to have made much progress beyond what is termed "flooding." The letting in of large volumes of water upon land, and the establishment of water meadows, dates back nearly two centuries in England. Ordinary irrigation, natural or assisted by man, is of pretty old date. Ordinary irrigation by flooding was practised in a rough way in Ireland during the seventeenth and eighteenth centuries. The Romans, remarkable for their architecture, canals, aqueducts, sewers, baths, &c., do not appear to have ever thought of sewage irrigation,—at least we do not remember to have fallen across any mention of it. The sewers of Rome, for extent, were on a grand scale, and were constructed at a great expense; rivers were let into them, and they were navigable under the city. To what extent *cloacal* matters found an outfall into them we do not know; they were apparently more for the purpose of drainage. Rome did not, no more than did London, think of a sewage irrigation in the sense we now look upon it, though it is impossible almost to imagine that the thought should not have struck thousands of minds in Rome, once famous in agriculture as well as architecture. Even in the present century, as is well known to all of us, our sewers were still utilised for surface water alone, the ashpit or cesspool being the common receptacle for all kinds of offal and excreta.

Sewage irrigation is now the cry of the day, and a sort of sewage war or battle of parties now rages. A B C and X Y Z systems have their advocates and opponents, interested and disinterested; but, after a little thought and common-sense retrospection, we can come to no other conclusion than that sewage irrigation and the establishment of sewage farms is the best and only practical, as well as profitable, remedy for our town and city refuse. Let anyone for a moment look at the frightful state in which some of our cities and towns are. Here we need only point to the foul, putrid, and villanous *cloaca* that oozes in our midst, dealing disease, death, and destruction, morally and physically. Instead of a putrescent Liffey we should have had a purified one long since, if civic squabbles had ceased, and common sense, instead of senseless rodomontade, were indulged in.

The pollution of our rivers means more, and involves more, than sickness or sewage waste. It means poverty, pauperism, increased rates and taxes, chronic disease, bankruptcy, death, and consequent national decadence. If the sewage of our towns and cities were utilised by a proper system of sewerage by carriers, tanks, outfalls, and other necessary appendages, sewage farms would spread rapidly their beneficial effect, and profitable farming, and increased work and food for the people over the island, would be the result. It has been pointed to already, and we shall point to it again,—what might be done in Dublin and its environs. What better facility could exist anywhere for utilising the sewage of the Liffey than we have presented in the existence of those waste lands at Clontarf? Is the anticipated or feared opposition of a few landlords or proprietors to act as a bugbear, to scare the Corporation from carrying out a most practicable scheme for the benefit of our city? For our part, we think the most of this feared hostility is merely illusory or make-believe, and it ought, if it exist at all, be submitted to the test of a public ordeal. If there are men who wish to injure our city by their blind opposition, let them come to the front; let them stand up and defend their interests, and bargain for their price, but let them not stand in the public way. The sandbanks of Clontarf could be turned into valuable account in the matter of sewage irrigation and farming, and we hope some clauses and amendments will be introduced into the Corporation Bill, before it becomes law, that will lead to the purchase and reclamation of the North Bull. It would be a benefit to both the city and county Dublin at large, to both the town and farming interests.

What might not be accomplished in the four provinces of Ireland? Look at Cork with its Lee, Waterford with its Suir, Belfast with its Lagan, and Galway with its river. Need we ask what state they are in, and how far they are health-purifying or life-destroying conduits? Need we ask how the corporation and town council of these places are doing their respective duties? Shall we say their sanitary energy is on a par with our own civic magnates? We have passed through the above cities during the summer, and we speak from personal experience that there are numerous streets and lanes in all of them in a frightful and deplorable condition. It is not only bad drainage and sewerage, but disease and polluted water, wretchedness, and inaction we saw. To put up a drinking fountain and a public urinal is to do a very good thing; but to give the poor water first fit to drink, and homes fit to live in, is much better. The noise and hubbub that are sometimes made when any small event takes place in some of our towns, is amusing. If a green grocer gives, or an old broker bequeaths, a few pounds to any local object, the local chronicler is in ecstacies in his eulogies; but the local chronicler is altogether dumb about the state of the local river and the state of the courts and dwellings of the poor, if his local patron, the mayor presumptive or *de facto*, is at all concerned about the necessity of a discreet silence. If Alderman Peter's tannery refuse, or Alderman Pat's soap slime, issue into the river, or other deadly nastiness, to kill the fish or poison the water-drinker, our local Argus does not see it, nor if it endangers an advertisement of his he does not wish to hear it.

Unfortunately our towns are very often in a bad state, and men are too grovelling, and fear to tell the truth. Why does not some of our wide circulating and well-to-do daily cotemporaries appoint a Correspondent or Sanitary Commissioner to visit and write up the social and sanitary state of our city? Do some of the proprietors of these journals fear that the awful disclosures certain to be made would reflect back upon themselves? The London Press, in one or two instances, did this sanitary work for the English metropolis, and the *North British Daily Mail* did it for Glasgow. The London *Builder* also, a few years since, struck consternation into the souls of men by its fearful but faithful pictures of the social and sanitary state of the poor and the poor districts of London. The *Builder* also has lately given us a faithful and painful picture of Edinburgh, Glasgow, and even Dublin.

Come, gentlemen of the metropolitan Press, up and do your duty! On your side is the strength, on ours is the will. You must move, or the work will be done somehow. There is a long winter before us, and poverty and suffering will be heard in our midst. Ere the next spring showers and summer sun shines over Dublin many of her sons and daughters will be beyond the fear of further poverty or disease. The winter is the time for sanitary work and improvements, so that the germs of future disease may be destroyed long before the time when it is again possible to warm them into life.

We commenced on Sewage Irrigation, and we end by a sanitary lesson, which we hope, as it is well meant, will not be taken ill. We feel we are doing our duty; we are conscious that we are preaching a life and a soul saving doctrine. Health is the primary and paramount consideration with man, and rulers who neglect sanitary laws are the worst and most disastrous enemies of mankind; tyrants and despots may butcher a population, but those in power who neglect the public health are the murderers of posterity.

THE TIMBER-BUILT HOUSES OF ANCIENT DUBLIN.

A TOURIST has lately remarked that the principal architectural improvements of Dublin in our day consist of insurance offices and gin palaces. Although we cannot agree with the entire of this statement, we must acknowledge we are largely indebted for many striking architectural features in our street façades to the former; we will dismiss the latter by simply saying that the tawdry finery and the lath and plaster decoration of the gin palace, no matter how much architectural taste may be developed in its construction, is of too evanescent a nature to demand more than a passing notice here. Stone-built edifices, happily not confined to insurance offices, have largely increased of latter years; and although we would prefer seeing our native quarries more utilized for this purpose, as in the building of the Union (now the Hibernian) Bank, in College-green, the Scottish Equitable Insurance premises, in Westmoreland-street, and some others, where most elaborate sculptures are executed in limestone, we are not inclined to find fault with the imported sandstones, English, Scotch, or continental, which so largely contribute to the ornamentation of our city.

We have entered upon these remarks in order to contrast the appearances which the thoroughfares of a former period presented to our now principal streets, and having heretofore described in the pages of this journal the improvements effected after the first quarter of the last, and up to the early part of the present, century, by the erection of almost all our public buildings of note, the rapid extension of our streets and squares in the same period, and, though last not least, the wholesome annihilation of narrow ways and nests of lanes and alleys by the Commissioners of Wide Streets, to give place to our modern wide and capacious thoroughfares, it would be a work of supererogation to recapitulate them here.

Like all other ancient cities, the domestic and wayside edifices of Dublin were originally of the most primitive description. So late as 1172, when King Henry the Second held his court here, there was no building of sufficient capacity in existence to accommodate his retinue: all the houses (if they may be so called) were erected with wattles daubed with clay and covered with sedge or straw; brick-built structures were unknown, and stone was only used in churches, monasteries, and works of defence; it therefore became a matter of necessity, and, perhaps, following the fashions of the country, that the king was constrained to erect a palace of smoothed wattles of superior description, *miro artificio*, as Roger Hovenden[*] describes it, in which he entertained the kings and princes of Ireland in that year.

In the sixteenth century we have it first upon record that the citizens constructed their houses in a more durable form, namely, of framed timber, and covered with tiles, slates, or shingles. This description of building appears to have been for some time extensively in use in England, of which we have sufficient evidence in London before the Great Fire, and in many of the provincial towns, as Chester, Ipswich, &c., where they subsist to the present day, and it is questionable if many of our modern brick-built edifices will ever attain the age of many of the houses now to be seen in Chester. But, reverting to our own city, we will quote from a very scarce book, written and published by Paul Deighan, Dublin, 1810, where, in a treatise on ancient Dublin and its cage-work houses, in speaking of Queen Elizabeth's time, he states:—"Several of these houses, erected in that queen's reign, have subsisted till of late years, and one particularly, in Cook-street, at the west side, and corner of Skipper-lane, was totally demolished on the 27th July, 1745, to make room for new houses. On an oak beam carried over the door the whole length of said house was the following inscription, cut in large capitals, in fair Roman characters, nothing damaged by time in the space of 165 years, except in one part, where an upright piece of timber was morticed into it, and was somewhat rotted:—

"QUI · FECISTI · COELUM · ET · TERRAM · BENEDIC DOMUM · ISTAM · QUAM · JOANNES · LUTREL · ET JOAHNEI · CONSTRUI · FECERUNT · A.D. · 1580 · ET ANNO · REGNI · REGINÆ · ELIZABETHÆ · 22."

"Thou who madest the heavens and the earth bless this house, which John Lutrel and Joan caused to be built in the year of our Lord 1580, and in the 22nd year of the reign of Queen Elizabeth."[†] John Luttrell was one of the sheriffs of Dublin in conjunction with Gyles Allen (1567, 1568), and it is probable he was the builder of this house.

Next door to the former lately stood (1810) a large and stately cage-work house, with the inscription over the door in Roman characters—

"ROBERT EUSTAC . AN MANNING, 1618."

Robert Eustace was also sheriff of Dublin with Thomas Allen, 1608, 1609.

In a lane leading from Cook-street to Merchants'-quay, called Rosemary-lane, part of the wall of an old cage-work house stands, over the door whereof, cut in timber, are two escutcheons of arms, and between them a date 1600, with the letters "E. P."

Mr. Deighan proceeds to describe several other timber-built houses, and he continues: "Several still remain in Patrick-street, without the walls of the city, which carry the face of antiquity; but as there are no dates visible on them, it is not possible to fix their ages. Amongst them there is one with this inscription—

'VICTORIA · MIHI · CHRISTUS · A.I. ——.'

The last letters of the name, with the date, being defaced."

Mr. Deighan then describes a large house of similar construction in Fishamble-street, on the front of which were two coats of arms, one of Plunket and the other with Plunket empaled with his wife, and continues: "Some of these kind of houses are yet to be seen in Castle-street, and lately in High-street, the Wood-quay, Thomas-street, and other parts of the city and suburbs."

There are many still living who can remember the cage-work house which stood in Skinners'-row (now Christ Church-place); it was called the Carbrie, and appears to have originally belonged to the Fitzgerald family, and to have been at several periods occupied by the Earls of Kildare. Subsequently, Dick's coffee-house was kept within its walls. It remained for a long time in ruin, and with it the last of the timber-built houses of Dublin disappeared; and it would appear to us, from the numerous authorities at our disposal, that for a period of over two hundred years all the better-class houses of the citizens were erected after this fashion. No doubt numerous objections existed to their continuance, but it must be allowed they contributed greatly towards picturesque appearance. They gradually gave way to brick buildings with ogee-shaped gables to the street, many of which still remain. They in their turn have been rapidly disappearing, to make room for more modern edifices. Most probably from the great extent of pine forests, and consequent facility for procuring timber, this style of building still prevails largely in towns over the Continent of Europe; they are numerous in North Prussia, Germany, and parts of France, more particularly in Russia, while the most remarkable are those of Switzerland, where they are constructed with a view to producing a much bolder and more effective general outline; but however picturesque they may be, and pleasing in their variety, and from their being totally devoid of unbroken lines, forming the direct opposite to many of our monotonous street views, we are barbarian enough in rejoicing that they no longer exist in our city.

SCHOOL OF ART, BELFAST.

THE new Government School of Art for Belfast was inaugurated on the 18th ult. It is located for the present in the two upper floors of the north wing of the Royal Academical Institution, College-square. These premises have been taken for a term of seven years, at a rent of £80 annually, which has been guaranteed by Mr. Dunville. Mr. Vere Foster has, we understand, offered to guarantee the head master's salary for the first two years, and donations and subscriptions (a list of which is before us) have been already liberally contributed by the leading merchants and others in the town.

The elementary class-room for males is a fine, large, well-ventilated apartment, 48 feet by 30 feet, lighted on both sides, and fitted up with desks of an improved design—the invention of the head master. The ventilation of this (as indeed of every room in the school) is very superior. The apparatus, designed by Professor James Thomson, is so constructed that the one temperature will be maintained at all times during school hours. This school-room will be capable of accommodating comfortably from 80 to 90 students. The ladies' room, on the same floor, is somewhat smaller; it also is a very comfortable apartment, neatly fitted up, painted, and supplied, as the other, with new furniture. There is also a cloak-room in connection, and the ventilation, as in the male school-room, is perfect. The head master's room is on the same floor. On the next floor, remarkably well lighted with skylights, is the sculpture gallery. It is furnished with casts from the antique, many of the casts being copies of the most renowned works of Grecian and Roman sculpture. There is a lecture-room on the same floor of the building, and in another room there is a library of valuable works on art, architecture, and design, to which the students have free access. Some of the most valuable books in the library are out of print, and are therefore the more to be prized; and as the object of the school is to cultivate the intellect as well as the eye, donations of valuable works on art and design are solicited by the managers. The Government assists the school in various ways—in making a considerable reduction on all casts and other articles supplied to the school—in providing a portion of the salaries of assistants; and the students have all the advantages offered in the Government Schools of Art, and are entitled to compete for studentships, scholarships, medals, and other prizes given by the Science and Art Department. There are also free studentships, so that a working man, by his own exertions, may have his education free. Although ladies and gentlemen may attend all the classes, and can compete for the prizes, the Government confine the special privileges they offer to artizans.

The courses of instruction are:—1. Elementary—Including freehand and model drawing, shading from copies, practical geometry, and linear perspective. 2. Advanced—Drawing and painting the figure, flowers, landscapes, ornament, &c., from copies and from nature; drawing and shading from the antique; systematic instruction in the principles of ornamental design, and illuminating. 3. Special—Orthographic projection, engineering and machine drawing, building and construction, architectural drawing, the projection of shadows, and modelling.

On the morning of Tuesday a large number of students in the various classes were enrolled. In the evening a goodly array of the patrons and friends of the school assembled to hear an introductory address from the head master, Mr. Lindsay. The chair was occupied by Mr. William Girdwood.

In his preliminary remarks Mr. Lindsay said—The chief aim of all art-culture is, first, a clear perception and discrimination of what is beautiful; and, secondly, an ability to represent that, or reproduce it for the delight of others. I not only allude now to picture painting and what is generally understood as fine art, but also and more particularly to decorative art, which we have, as it were, insensibly wrapped up in our feelings, working a healthy or baneful influence on our very lives, as the objects with which we are surrounded are in shape and ornament good or bad. After contrasting some of the productions of the present day with those in vogue but a quarter of a century ago, he continued:—The day I hope may not be far distant when Belfast, following close upon the example of Belleek, may enjoy for some especial art-productions as enviable a celebrity. It is then our mission to attempt to establish some of those excellent results as are noticeable in the other hives of industrial art; and designers of all sorts will be materially benefited by a regular attendance and systematic study. But there are other occupations to which this is equally applicable—to the carpenter and joiner, for instance. The requisite knowledge of art may appear to stop at setting out a hand-railing; but are there not open-timbered roofs required, handsome staircases, cornices, windows, and doors, with their numerous mouldings and panellings and other ornamental matters, in which curvature and proportion, fitness and beauty, are of the utmost importance? And if the carpenter or joiner desires to rise above the mere mechanic, he must be able to lay down upon paper the true forms of his work in plan, section, and elevation; and though he will be largely indebted for help to his compasses, still the power must come originally from his own good taste, educated eye, and correct hand. To such as the stonemason, plasterer, and blacksmith, art opens up a still wider field. Carving and iron-work, thanks to the revival of Gothic architecture, have again come largely into use; and it is advisable to the craftsman to apply himself to obtain a ready power of drawing and modelling, a knowledge of the various styles of ornament, and the thorough use of his case of instruments; and I might add to these wood-carving, glass-painting, book-binding, and a dozen other trades, in which a man, by an intelligent study of the principle of ornamentation, may improve at once his position and pocket. Then, there is always, of course, a number of students with a more or less definite aim, who have a love for drawing, or a "taste," as they express it, and who pursue the study steadily, in the hope that some day they may draw "something;" and, besides these, there is a more ambitious class, who start with a clear determination to become painters. Women are more especially of the former class; their aspirations not venturing beyond flowers, landscapes, and chalk heads from copies. But I do not see why, in this age of progress and women's rights, they too need not become designers, modellers, and lithographers; and I have quite made up my mind to try to induce some kind firm to perform a graceful act in aiding us in this matter when occasion serves. I may tell you that at South Kensington Museum there has been established for some time a females' class, for working in mosaic and tile painting, and it has met with an extraordinary amount of success, as might have been expected; for in these subjects, as well as in wood-carving, the more delicate hands, the nicer perceptions, the more patient character of our sisters ought to be utilised, and, without doubt, they will render excellent account of themselves. Now, I would sketch freely and briefly our mode of instruction. To all students a knowledge of freehand is primarily indispensable. Not of sketchy, hasty, clever-looking sort, but with careful, even line, so as to show that the student is fully alive to all the subtleties of curvature , as well as correctness of details and proportions; for this purpose we use copies of geometric, ornamental, and floral forms, and as soon as possible models, such as vases, cubes, cylinders, cones, &c., and afterwards natural forms, as flowers and foliage. Concurrently with this, such students as intend becoming architects, engineers, builders, joiners, and such, will pursue the study of practical geometry, and when sufficiently advanced in both subjects will take up the study of orthographic projection, or the principles of plans and elevations, preliminary to architectural or machine drawing. Those who intend to pursue drawing with the object of applying it to designs, will have to undergo a more severe curriculum of freehand outline, copying numerous examples, so as to be intimately acquainted with the various styles. Model drawing, too, will be also proceeded with, then chalk-shading from copies, while their attention will be drawn to the analysis of ornament and the general principles regulating design and colouring. Spaces will be given to fill up ornamentally with simple forms such as circles, ivy leaves, &c.; and they will also copy carefully examples from such standard authorities as Owen Jones and Louis Grüner. He then will be initiated into the analysis of flowers, and the best way to adapt their myriad beauties to ornamental purposes, and then they may proceed with applied design, making use of such knowledge with regard to the requirements of the subject as they can only get in the manufactory where they may be engaged. Those who intend to proceed with drawing as a fine art, when they are sufficiently advanced, will draw largely in chalks from the cast, using examples of ornament, fruit, and leaves, of which we have a great variety. Afterwards they will attempt casts from the figure, details at first, but subsequently the whole figure; afterwards the same in oil monochrome, to learn the use of the brush, and finally the human figure. Modellers, instead of shading from the cast, will proceed to use the clay. Now, I want to say a few words about the place in which we are to work. When finished—as it will be shortly—it will be one of the completest Schools of Art in the three kingdoms. Your council have spared neither time, trouble, nor expense to meet all your wants, and to make you so comfortable, that it will be a pleasure to work in these rooms. They have had the most extensive sets of examples, casts, &c., brought together; and, as a family, I shall look to you to conserve them. We have already a Model School in Belfast; why not earn for ourselves the title of a Model School of Art? I feel confident that we shall have a large attendance of the artisan class in our school. We especially invite the cunning artificer in brass and iron. We shall be disappointed if we do not meet the young mason, cabinetmaker, upholsterer, joiner, carver and gilder, house-painter and decorator in our classes. We have no hesitation in saying that we can impart instruction of practical value to the operative, no matter what the craft by which he earns his daily bread. But I know that those who have to rise early and devote ten or twelve hours of every working day to labour, need a strong motive to induce them to give two hours more to a pursuit devoid of all the attractions, and offering none of the temptations of social enjoyment, or exciting sports or pastimes. I can only say to my friends, the operatives, that, as they well know (none so well), care and consideration, in addition to manual labour, are required for every structure and every fabric, useful or ornamental, that is to be a credit or a profit to him who produces it. They cannot expect that the acquisition of the art of drawing and of the principles upon which all constructive soundness must be based, and those, too, of which all elegance and beauty are the expression, that such an acquisition can be made without prolonged and earnest self-sacrificing attention. I should deceive the indolent and insult the industrious were I to seek to persuade either that the arts we cultivate here are to be mastered hastily or easily; though we seek beauty, our path will sometimes be beaten, but wearisome to follow; at others rugged and difficult to trace, and we can never promise to have it strewed with roses. But in the sports of our school-days, in the more ambitious feats of our emulous manhood, does not the difficulty, the necessity alike for vigilance and endurance add zest to the pursuit? Let us be animated here by the same manly—I had almost said Irishmanly—impulses. I cannot make your path flowery; and, to be honest with you, I would not if I could. I have travelled the road myself, and not at so distant a period as to have forgotten the trials and heartburnings by the way; nor either, let me say, with thankfulness for myself and encouragement to you, the sense of honest triumph that attended such measure of success as I achieved. I shall, then, be your companion; and I will point out the best path to take, if I urge you to avoid the delusive short cuts—to climb the heights rather than skulk along the plains; if I ask you sometimes to take a sinuous path, a "seeming maze without a plan." I hope to inspire such a spirit of good fellowship between us, that you will neither become sceptical of the result, or faint-hearted in the pursuit, but bravely resolve to go on—on—on to the glorious end. In a word, I hope to meet in the school not merely students, but friends. I have, in conducting classes many thousands of miles from this spot, proved the plan of treating my school as a family, so I have not been talking "by the book," but from experience. As then, so now, I hope to learn something of the wants and wishes of all who come under my instruction, and I trust that, by steady work and mutual good will, that we may be able, at the first examination, to show that we have all wrought patiently and zealously, and not wrought in vain.

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[*] "Anal Pars Posterior," p. 302. Saville, 1598.

[†] Mr. Deighan gives the inscription translated in English as above; we have obtained the original Latin from "Malton's Views of Dublin."

CORRESPONDENCE.

[*It is to be distinctly understood that although we give place to letters of correspondents, we do not subscribe* editorially *to the opinions or statements set forth in same.*]

ST. PATRICK AND THE ROUND TOWERS OF IRELAND.

TO THE EDITOR OF THE IRISH BUILDER.

"O king, when Baal's dark reign is o'er,
When thou thyself art gone,
This fire will light the Irish shore,
And lead the people on:
Will lead them on full many a night
Through which they're doomed to go,
Like that which led the Israelite
From bondage and from woe"
Mac Carthy.

Sir,—Our only living national poet, whose poem on the "Pillar Towers of Ireland" coincides with my Baalist views, beautifully describes in the above verse St. Patrick's belief in the annihilation of Baalism and the glorious triumph of the faith he proclaimed, when on the plains of Magh-Breagh he showed his contempt for Baal's worship by lighting a fire on Easter eve in defiance to the mandates of the monarch. So far from the round towers having been erected after our great apostle's mission, the great work and object of his life was to overthrow the idolatry for which they were erected. When he was brought to Ireland, and sold to Milcho, a mountain in Antrim called Slieve-Miss, or the "Mountain of the Moon," was the place of his meditation and prayer. But, although he found the people involved in the idolatries of Baalism, yet he had a learned and cultivated race to contend against. Camden (an Englishman) says, "St. Patrick found the Irish Druids who contended with him at Tara eminently versed in Grecian literature and astronomy"; and the Arch-Druid of Ireland was acknowledged supreme by all the Druids of this kingdom (Britain and Scotland included). In the year 79, four towers were specially erected for the four provinces, and orders were issued by the Baalist priests to supply the sacred fire to the four provinces of Ireland from the great sun temple at Tara. The address delivered by St. Patrick to the assembled kings, priests, and nobles at Tara proves the existence of Baalism, and, consequently, of the round towers in which the worship was conducted:—"That sun whom we behold rises daily at the command of God, yet will he never reign, nor shall his splendour endure; and all those who adore him will descend wretchedly into punishment. But we believe and adore the true Sun, Christ." Giraldus Cambrensis (1185) states that the fishermen, as they sailed through the waters of Lough Neagh on a fine summer day, distinctly pointed out the remains of round towers beneath the shining waters. Annalists assign the period when the inundation took place that formed the lough to A.D. 62; and at the present day, about two miles south of Lough Neagh, stands the round tower of Antrim—one of the best preserved edifices of the kind in Ireland. The scriptures record that the horses dedicated to the sun were next the temple, and were destroyed by the good king Josiah. Now, on the principal base of the old Baal crosses—*not* the Christian ones—we have representations of prancing horses. The Tailtini games and the chariot-racing (identified with sun-worship both under the Judaic, Olympian, and Irish Baalist economies) were abolished by St. Patrick at Tara. Serpent-worship was also associated with the idolatry, and still exists in the East, where round towers similar to our Irish edifices are to be seen. The figures of serpents still extant on the old sculpture of this country, and all in proximity to the round towers, and so prominently engraven upon the old croziers and other relics from time to time found buried under the soil,—all this proves beyond a doubt that the arguments I have advanced identifies the tower with the apostacy of Baalism. Thus we find even tradition bearing it out. At Glendalough the guide points out "that lake whose gloomy shore" lies beneath the shades of Baalard, into which St. Kevin banished the serpent. So that it is evident St. Patrick abolished the serpent-worship that prevailed, as well as overthrew the Druidic power, for which the round towers, cromleachs, &c., were erected. And if antiquarians only considered the subject properly, they would find that, by adhering to the Petrie theory, instead of accepting that which ascribes their origin to Baalism, they detract from the great and divine mission of our holy apostle; whereas, by following the line of argument I have pursued, from time to time, in elucidating the subject, it is to him we must give the chief praise for abolishing the false system on which the round tower prophets and priests based their apostacy, and, by taking this view, can we alone look upon the round towers as memorials linking the past with the present—leading the mind back to 3,000 years, and chronologically pursuing through the track of time the glory and fall of Baalism, and the origin, design, and uses of those Sidonian temples—those grey-capped towers, surrounded by emblems and monumental proofs clearly establishing the origin of the peoples who erected them, and the uses for which they were designed.—I remain, sir, your obedient servant,

CALEB PALMER.

Ashbrook, Raheny, Oct. 28, 1870.

ARCHÆOLOGICAL NOTE.

TO THE EDITOR OF THE IRISH BUILDER.

SIR,—Whilst excavating for a main sewer at Leighlin bridge in this county, through the grounds of Mr. Bathe, known here as "The Garrison" (Mr. Bower, C.E., being the engineer of the works in question), in the vicinity of the Black Castle, the labourers discovered several human remains, quaint old pipes, spear (? pike) heads, cannon balls, and some coins of brass, I should think of the reign of "Shemas à Cockha," *i. e.*, James the Second. I shall endeavour to get authentic information as to how these poor wretches were killed within the boundary of the Pale. It may be they were opponents of the invader and usurper, Cromwell; or belonged to either of the rival houses of the Geraldines and Butlers. In any case, it is a fact that they were not *decently* interred, as, had they been, we should have met some fragments of coffins, clothes, &c. The remains have been deposited near the same place in which they were found.—

C.E.

Bagenalstown, 20th Oct., 1870.

LONDONDERRY ACADEMICAL INSTITUTION.

THE foundation stone of a new building for this institution was laid on Monday, by Sir W. A. Rose, F.R.S.L., Governor of the Hon. the Irish Society. The proposed building will be at Edenballymore, near Crawford-square, and will command extensive views of Ross's Bay and the River Foyle, a large portion of the County Derry, and the mountains of Innishowen. The ground floor will occupy 5,184 square feet; the materials to be employed will be procured from quarries in the neighbourhood; the dressings are to be of freestone, which will contrast pleasingly with the masonry. The plan comprehends—on the ground floor, class-rooms, 47 by 23 feet; porches, entrance-halls, cloak-rooms, masters' apartments, kitchen, and offices. The first floor plan consists of school-room, class-rooms, and masters' dormitories. The second floor will be occupied by dormitories for boarders, and on each floor there is ample lavatory and water-closet accommodation. The style of architecture is Italian, and is remarkable for the simplicity of treatment, and the almost total absence of any mere ornamental features. Mr. Richard Williamson, C.E., is the architect, and the contractors are Messrs. Matthew M'Clelland and Co., of Derry. The Rev. Professor M'Gaw, honorary secretary of the institution, reviewed its history, in the course of which he stated that the total subscriptions amounted to £3,919, of which £1,000 had been subscribed by the Honourable the Irish Society. The school buildings about to be erected would cost £3,500, exclusive of furniture, porter's lodge, and other requisites, and upwards of £600 had already been expended in rents, school furniture, salaries of assistant masters, and the general outlay always incident to the successful starting of such an undertaking. Every subscriber of £50 is a life governor, and has the right of nominating one boy for free education in English, classics, commercial branches, and mathematics, for a period of three years. A silver trowel having been presented by the contractor to Sir W. Rose, that gentleman laid the foundation-stone, and then addressed those present, wishing success to the new institution. The meeting was afterwards addressed by the Rev. W. M'Clure, who has taken a great interest in the institution. A public *dejeuner* was subsequently given in the Corporation Hall, to which about 100 gentlemen sat down. The chair was occupied by Dr. Miller, Mayor of Derry. The usual loyal and other appropriate toasts were proposed and duly responded to.

EN AVANT.

(Point, de double entendre.)

The Board of Works—a board of many knots—
Have plans before them arranged in plots;
In new designs and old it's always rife.
On street improvements and in civic strife.
The public parks and public statues, which
Can grace a city, if not make it rich,
Are in their hands, and under their sole care,
In bright Trafalgar and bleak Leicester Square.
The mob may hold its meetings, and proclaim
"*Vive la Republique!*" and note the same.
What cares Ayrton, what cares Censor Bruce,
If Landseer's lions are dock'd or let run loose?
To guard a column or protect its base,
To save a sabre or restore a mace,
To raise a fellow king upon his steed,—
To do these things requires an Act and deed.
"This duty, messieurs, plainly is not mine,"
Blandly replies the knight of Serpentine;
"My duty is to save the public purse,
"Though such matters go from bad to worse.
"Things that can grow no worse, are sure to mend;
"'Tis wisdom, then, to wait until the end.
"Rome, my friends, was built not in a day;
"London will rise when Rome has pass'd away.
"The truly patient race are truly wise;
"And Government, to last, must economise."
Thus bespoke the Chief, for his colleagues all.
—Given at our house at the Whitehall.
MDCCCLXX. Œ.

NEW FEMALE ORPHANAGE, MOUNT ST. JOSEPH CONVENT OF MERCY, STRABANE.

THE Sisters of Mercy in Strabane, feeling deeply the want of a home for the orphans of the poor, where they may be protected and trained for various occupations, have undertaken to build an addition to their present orphanage, which has accommodation for only forty children, the extended accommodation now proposed is for 150 more; it is hoped when this shall have been completed that the industrial school attached to the institution will be self-supporting. The aim of the community is to train female orphans for active service as good and faithful domestic servants, so as to supply a deficiency widely acknowledged.

The new building comprises a dormitory for 150 children; a refectory, with kitchen and the offices necessary thereto; a lavatory, with closets, and a dressing-room. A separate staircase affords direct access from the dormitory to the several departments on the ground floor and to the play-yards. The new entrance porch is intended for mendicants in waiting for alms, &c. A new porch, which will combine the advantages of a verandah and of a conservatory, will be erected in front of the present entrance, which will still be the principal entrance to the institution.

The view (*vide* our illustration in this number) presents a new wing attached to the old building, with a tower marking the point of junction; and as the house stands on an elevation, with a bold terrace in front, which is approached by a winding avenue on an easy ascent, it is expected that, though simple in detail, this manner of grouping the several parts will show effectively.

The style of finish will be plain and substantial, use being made, as far as practicable, of the materials of the locality. Considerable attention is given to the heating, lighting, and ventilation, and all the modern improvements, with the view to securing economy of space, labour, and expense, and for affording facility for cleanliness, are proposed.

It is estimated that the cost of the building for entire completion will not be less than £1,800, which is being raised chiefly by donations from the charitable; the lady superioress is unremitting in her efforts to augment the resources of the institution. A bazaar and grand drawing of prizes in aid of this benevolent undertaking is being organized, to take place on the 9th, 10th, and 11th inst., when a large number of valuable prizes will be drawn for.

The design for the new buildings has been prepared by Messrs. Harte and Stirling, architects and C.E.'s, of 179, Gt. Brunswick-street, Dublin, and Buncrana, under whose superintendence the works will be carried out.

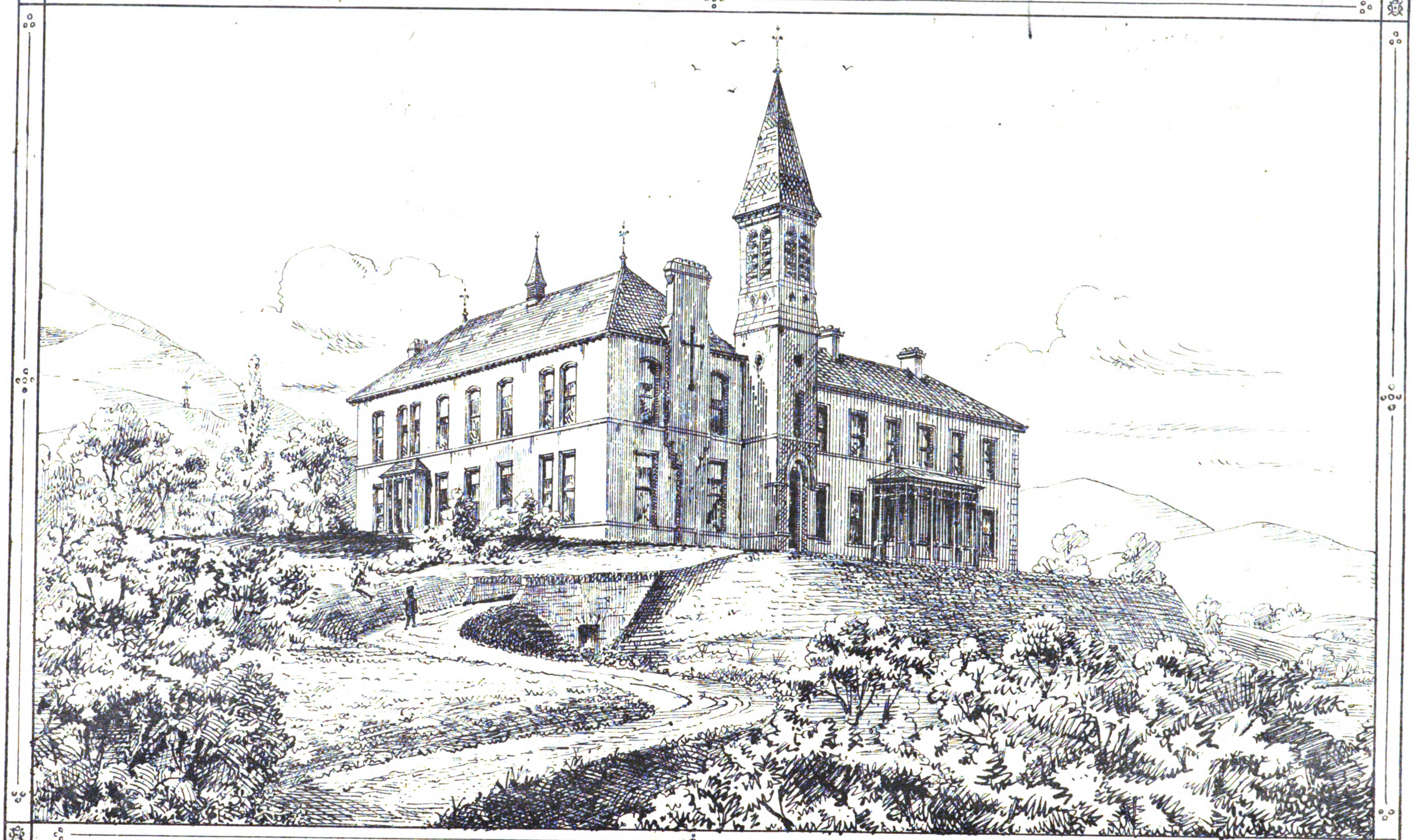
THE MAIN DRAINAGE OF DUBLIN.

ON this subject Mr. G. W. Hemans, C.E., writes as follows to the *Builder*:—

"In your last impression you have a short leader on the proposed main drainage of Dublin, a work tardily resolved on, but most urgently needed, owing to the almost incredibly filthy condition in which the river Liffey has long been suffered to progress in a cumulative ratio.

The proposed plan is a very good one, but your article naturally complains of the apparent folly of the intention to cast all the valuable sewage of Dublin into the sea near the mouth of the harbour, where it is supposed by the writer much of the foul matter may be washed back to Dublin by the flood-tides.

While I demur to this assumption, and believe, from an intimate knowledge of the locality, that there is little to fear from returning sewage, I beg to say that there is no difficulty whatever in carrying out an excellent and cheap scheme for the utilisation of the Dublin sewage, in the immediate vicinity of the proposed outfall into the sea. No city that I know, in fact, has such obvious and convenient facilities, for the purpose in



MOUNT ST. JOSEPH CONVENT OF MERCY. STRABANE.

PROPOSED ORPHANAGE

MESSRS. HARTE & STIRLING C.Es. & ARCTS.

the great strand at Clontarf, called the North Bull. There a large island or peninsula can be formed, of from 1,500 to 2,000 acres, surrounded wholly or partially by the sea, protected by very moderate embankments, and consisting of sand mixed with a little mud, just suited to sewage irrigation. A large portion of this waste is already over high-water mark, and the rest is slowly warping up.

The proposed outfall will skirt the edge of this suggested reclamation, and literally there is little to do (beyond making the embankments) but to let the sewage flow over the land, instead of pouring into the sea.

This plan has for some years put forward by me, and has been explained to the Dublin authorities, who have been only deterred from taking it up by threats of opposition from proprietors on the neighbouring shores of Clontarf and Howth. The apprehensions of these proprietors, I feel convinced, are groundless. A belt of salt water of several hundred yards in width would interpose between them and the nearest point of the proposed sewage farm, while the porous nature of the land to be enclosed would prevent all stagnation, and the growing crops alone would take up all the sewage that did not sink into the sand.

In such a situation, I believe a very good profit could be made on the outlay, the sewage being at the threshold of the farm without expense.

In the metropolis sewage utilisation scheme for London, to which I was engineer, and which was suspended for want of public support, a culvert of over 40 miles in length and 10 ft. diameter, and costing one million sterling, was necessary to lead the sewage to the Maplin Sands, where a farm of 12,000 acres was to be made to utilise the sewage upon. How vastly better situated Dublin is in this matter will at once be seen from the above statements by any one who can, like myself, add C.E. to his name."

ST. CANICE'S CATHEDRAL, KILKENNY.

WORKS of restoration have been in progress for nearly six years at this ancient edifice. They having been within the past month found to be in a sufficiently forward state to allow of its formal re-opening, that ceremony took place on the 13th ult. Our contemporary, the local *Moderator*, is of opinion that "the result is of a character exceedingly gratifying." Some minor details in connexion with internal fittings, &c., have yet to be carried out, when funds shall be available for the purpose. The journal above mentioned, in its number published immediately after the re-opening, laid before its readers an interesting history of the building, and the various changes it has undergone since its erection in the thirteenth century. We reprint the paper *in extenso* :—

We must presume the general history of the Cathedral of St. Canice to be familiar to our readers, and we therefore shall not enter here into its details. As a specimen of Irish Architecture (being thirteenth century, or "Early English" Gothic in style), the simple elegance of the design and the harmony of its proportions are the features which strike the visitor. The expressed desire of the Dean and Chapter, in entering upon the restorations, was that everything to be done should be in strict unison with these attributes; and we are happy to say that that very commendable desire has been pretty closely adhered to. The ancient church has not been *modernised* or *barbarised*—it has been re-edified, not rebuilt—restored, but not remodelled. It was necessary to clear away the excrescences which more modern repairers had tacked upon the original work of the builders, obscuring many of its beauties; and the operations for bringing about that end have, except in some slight and comparatively trivial matters, been judiciously effected. Having been for the most part built early in the thirteenth century, three great changes, at irregular intervals, were made in the original plan; and, from the work of the innovators of these three periods, the design of the present restorations was to purge the venerable structure. The first great change took place within little more than a century from the foundation having been laid. The annalist Clyn, a Friar of St. Francis' Abbey, living at the time, records that in the year 1332, on Friday, the 11th Kalends of June, "The belfry of St. Canice of Kilkenny fell, and great part of the choir. The ruins broke down the vestibule of the chapels and the bells, so that it was a horrid and pitiful spectacle to the beholders." Bishop de Ledred, who filled the see at the time, and continued to occupy it till 1360, in re-erecting the tower and repairing the general damage done by this catastrophe, had so great a fear of the tower falling again, that he built up solid walls as a support, where there previously had been arches, and thus changed in a great degree the plan of the internal arrangements of the church. The next considerable change was effected after the Restoration of Charles II. to the throne of England, when Bishop Williams, who, during the preceding period of anarchy, had fled from his diocese, returned to Kilkenny to find that the Cromwellian settlers had made sad havoc in his cathedral in the interim; and, declaiming against those "lunatic limbs of the beast," as he styled them, for having "beheaded" most of his churches, respecting the principal one he writes:—"The great, and famous, most beautiful Cathedral Church of St. Keney they have utterly defaced and ruined, thrown down all the roof of it, taken away five great and goodly bells, broken down all the windows, and carried away every bit of the glass, that they say was worth a great deal; and all the doors of it, that hogs might come and root, and the dogs gnaw the bones of the dead." This bishop exhibited more munificence than taste in the proceedings which he at once entered on with a view of repairing the injuries of "the Cromwellian visitation." He repaired the roofs and doors, but stopped up several windows, to save the expense of re-glazing, and made several other disfiguring changes which want of means, as much as lack of taste, perhaps, may have suggested. The third period of innovation dates just a century since, when Bishop Pococke entered on his "restoration." He expended a considerable sum in alterations, which, according to the ideas of the time, effected a wonderful improvement. If the style of the original building had been Classic, there can be no doubt his "improvements" would really have been what he intended them to be; but his very fine internal choir-fittings of carved oak in the Corinthian style were terribly incongruous, and his colonnade, built against the gable of the north transept, in the Ionic order—in itself a very handsome structure—in the place where he put it, formed a glaring excrescence, till it was removed within the past couple of years. He showed most commendable care for the ancient monuments—previously treated in Bishop Williams' time apparently as mere rubbish,—which he caused to be collected and arranged in the nave; but he built up, or allowed to remain built up, considerable portions of nearly all the windows, which continued thus dwarfed of their fair proportions till the present restorations were carried out.

To remove the unsightly additions of those three periods of change, and bring the old cathedral back as nearly as possible to the originally architectural purity of its design, was the object of the works which the Dean and Chapter of St. Canice prepared to enter upon six years ago. All the Corinthian fittings had to be cleared out, and the various lath-and-plaster bulks and contrivances of "Churchwardens' Gothic" work which had been introduced here and there for some centuries, having been swept away, the skeleton of the ancient Cathedral of St. Canice, as it appeared before the days of Bishop de Ledred, was presented to view. The writers of the "History and the Antiquities of St. Canice's Cathedral," published in 1857, had speculated that, the choir fittings being removed, and the various layers of plaster and dashing hacked off the walls, evidence would be found of arches between the choir and the side chapels, and a row of clerestory windows above, on either side. These speculations were verified to the fullest. The clerestory windows, which had been built up, had only to be opened. Of the arches below, one on either side was quite perfect, whilst it appeared the second on either hand, being those nearest the tower (having been broken down in the catastrophe of 1332), had been built up solidly by de Ledred. Arches were also found to have existed till the same calamity destroyed them, between the choir aisles and transepts, showing that these aisles had originally formed continuations of the northern and southern lateral aisles of the nave. The recesses of the ancient sedilia in the south, and of an aumbry in the north wall of the choir also became apparent, as well as a niche in the latter wall, which evidently had once formed portion of a sepulchral monument. The sedilia have since been restored at the expense of Lord James Wandesforde Butler, his lordship intending to place sepulchral brasses, to the memory of departed relations, within the niches. The aumbry also has still more recently been restored, the Rev. John L. Darby liberally contributing the necessary funds. As regards the sepulchral niche, the architectural character of which shows it to have belonged to the middle of the fourteenth century, there was every reason to suppose it had been formed there by Bishop de Ledred, in the course of his "restoration," as the place for his own monument. The effigy of a bishop, put up elsewhere by Bishop Pococke—who probably took it out of this very niche when about to cover it over with his Corinthian wood-work,—was found to fit the space exactly. This effigy was supposed by Dr. Shee to be that of Bishop St. Leger, who died in 1287. From the boldness of the design and execution, with some very Early English-looking foliage on the cushion whereon the feet of the figure rests, it seemed old enough to have formed the monument of Bishop Mapilton, A.D. 1251, which is expressly stated by the annalists to have been "adorned with his statue"; but the figure wears the sandals and cord of the Franciscan Friars, and no Franciscan filled the see but de Ledred. The local archæologists were much puzzled by the circumstance. It was difficult to suppose the Early English sculptures could be found on a tomb of 1360, but the Franciscan habit was not to be got over; so that it seems to have been ultimately decided that the effigy was that of de Ledred, the sculptor possibly having followed some ancient model, and so the figure was placed in the niche in the choir, undoubtedly of the period of that bishop's death, and which it fitted so exactly as to lend additional support to the arguments in favour of the appropriation. The arches at either side of the western end of the choir were duly restored, and add much to the effect of the building. But the transeptal arches—were they not to be restored also? The architect at first said "nay," for he deemed there might be danger of the wall, so solidly built by de Ledred, giving way if an attempt were made to pierce them. The majority of the chapter, also, were apparently but too glad to adopt this decision, because by this time their funds were running short. However, one of their body—the Rev. James Graves, to whose presence in the chapter the success of the present restorations owe so much—succeeded in preventing such a decision by personally taking the responsibility of all danger of a "break down." He, in conjunction with the dean, who gave his earnest support in the matter, obtained by subscription the sum necessary to defray the expense. Thus the original harmony of the design of the structure was restored, and every man possessed of an iota of taste, who inspects the cathedral as it stands, will at once declare that if the carrying out of this arrangement had been omitted, the "restoration" of the Cathedral of St. Canice might as well have never been entered upon. In the meantime the important work of newly roofing the structure had proceeded, beginning with the nave. The roof of the nave is certainly very beautiful, and is highly creditable to the architect, Mr. T. N. Deane. As we differ from that gentleman's views in many respects, we wish to do him full justice where we see what we can appreciate. It is massive, but not heavy; altogether its effect, as a whole, is admirable. It were much to be wished, however, that it had been so arranged as that the greater portion of the circular window of eight foils in the west gable had not been covered, as it is, internally. A little more consideration for gable windows, when the roofs were being designed, would have been very desirable all through. The uppermost circular window in the gable of the north and south transepts are both partially obscured in a similar way; a deviation from the original design had to be made in a portion of the east end of the roof of the choir, whilst it was in course of being erected, to prevent a window from being there partially covered; and after the roof of the chapter-room had been put up, it was found necessary to cut away a tie-beam and king-post which crossed the windows. The roofs of the transepts differ from that of the nave in having tie-beams and king-posts. These all good authorities on ancient architecture pronounce not to be in strict keeping with a hammer-beam roof; the effect of their removal would be to have the transept roofs correspond with that of the nave, the beauty of which everyone will admit. This suggestion the chapter declined to adopt; the architect opposing it on the ground of involving danger to the stability of the side walls. There can be no question, we think, that these tie-beams and king-posts detract much from the beauty of the roof, and it is difficult to imagine why the transept roofs could not do without them, on the score of stability of the walls, when we find them not required in the nave, where there is much more than double the length of wall standing only on pillars and arches, whilst the transept walls are solid, and supported on one side, at all events, by abutting side chapels. The dean and Mr. Graves, supported by a majority of the chapter, were more successful as regards the choir roof, where, notwithstanding the architect's warning of "danger" also, they not long since obtained a vote from the chapter for removing the tie-beams and king-posts, which had cut up the view of the interior of the church from the western entrance in a very unsightly way. Three ornamental iron girders, affording support to appropriate coronæ for lighting the church, were substituted. The vast improvement produced in the general effect by this means is striking in the extreme; and as yet, at least, we are happy to state, there is no indication of any probability of danger attending the arrangement. It is consolatory to think that a similar improvement may at any hour be effected in the transept roofs by the application of a hand-saw. The most recent restoration which has been carried out was the suitable arrangement of the sepulchral monuments and tomb-slabs. These are of very great interest to the archæologist, the largest and most varied collection of interlaced crosses of the 16th and 17th centuries, in Ireland, being presented by the monuments in St. Canice's. All those the original sites of which could be determined were carefully placed in their proper positions; the others were suitably arranged in the floor at either side of the nave, and have a good effect, as affording a variety and contrast to the tiling. Several monuments, the existence of which was not previously known, found buried beneath the floors in various parts of the church—some, too, which had been reversed and used as flooring flags—were brought to light during the progress of the restoration, and have been suitably laid down with the others. It is to be regretted that portions of four or five ancient monuments have disappeared during the progress of the works, and are supposed to have been used by the masons as ordinary building stones.

On the whole, however, as we have already said, the nineteenth century restorations of St. Canice's Cathedral are of a satisfactory character. Most of what is in any way objectionable can be easily remedied when good taste asserts itself; and we are most thankful that actual barbarising operations, which too frequently attend any interference with ancient buildings on the plea of necessary renovation, have here been, we may safely say, altogether avoided. The vast improvement recently effected by moving the stalls to their proper position will be greatly enhanced when the splendid stone pulpit (so incongruously erected in the choir) takes its proper place under the tower vaulting, and the Bishop's seat is re-modelled and re-erected in a more suitable position.

EDUCATION OF THE LABORING POPULATION.

The title of a paper read by Mr. James S. Randell, at a conference held at Chippenham, was "Is the better Education of the Laboring Population essential to any General Improvement in their Dwellings or Habits of Life?"

In entering upon the subject (said Mr. Randell), may I presume we all recognise the fact that many of the laboring classes live in circumstances inimical to health, decency, and morality? If this is admitted, the next step in order to a correct appreciation of the magnitude of the subject, is to consider the population to be influenced...... Can you hope to lift them from their present condition and to place them as you wish, at the cost of the landlords, or by the funds of charity, and to do so in the face of the opposition of the class you wish to serve, or, at best, notwithstanding their indifference? Such benevolence is, I fear, impracticable; but the result we seek is, I believe, attainable. We cannot lift them, we cannot carry them; but if they will rise up and walk, we may guide and direct their steps, and assist their progress; that is to say, we cannot effect the desired improvements without the co-operation of the laboring classes themselves, and this we cannot hope to secure till we have cultivated and matured in them an appreciation of, and a desire for, the improvements. We must teach them the attendant circumstances that lead to debility and fever, they will then seek to remove them from their dwellings; we must teach them the importance to their well-being of light, ventilation, and cleanliness; we must open their eyes to their necessities; we must produce in them the desire for the benefits; we shall then realize the difference between acting on an unwilling, or, at best, an indifferent mass, and leading and assisting those who are anxious to follow. When we have cultivated in them an appreciation of the benefits, they will then work out their own improvements more surely, more effectually, and far more beneficially than we can do for them. Effecting it in this way, we not only insure the desired result, but we also elevate their capacities, and prepare them for other useful effort—thus their physical and moral status will both be beneficially influenced.

When the laboring classes have learned to value good dwellings, to conserve the property, to pay the rent regularly, another, and a superior class of investors will soon be ready to supply their wants; and do not let us be discouraged that this cannot be done in one year or in two years; this branch of education, like every other, must be progressive: it takes time to change the habits of any class. What I am most anxious about is, that we start right; that we recognise what appears to me the important fact, that we must first educate the laboring class to a knowledge of the importance of their welfare of a health-conducting home.

We can at once set about this. Let sanitary truths be taught in every school; we shall then, at least, secure the knowledge to the rising generation. But we shall do more than this; the parents will be reached through the children; the information taught at the school will be carried home to the cottage: it will do more than this, it will permeate up to the middle class, some sections of which are as destitute of sanitary knowledge as any of our labouring poor: yes, and it may permeate higher still. Everyone wishes to have good health and to live as long as possible, yet the very knowledge by which life and health are secured is ignored in every system of education, from the highest to the lowest.

As regards Government aided schools, I should like to see the Government grant in aid made contingent on the teaching of sanitary information—there are many elementary works that might be used for reading lessons that would convey the information, such as, The worth of fresh air—the value of pure water—the value of good food—the influence of wholesome drinks—the gain of a well-trained mind. Let this teaching be one of the conditions for the receipt of the grant in aid, and the subject will soon be generally and well understood; if we do this, the next generation will not pass through life without securing the desired improvements. There are already a large section of the labouring class in a position to command the desired homes, if they appreciated them; there are, at the present time, thousands of mechanics and artizans in this country, earning wages ranging from four to ten shillings per day, who are content to domicile their families in dwellings that cost them from three to four shillings per week rental, while they spend on stimulants and tobacco for their own personal consumption, four times the amount of rent they pay. Improve their wants, and they are in a position to give effect to improved desires. How would it aid the health, comfort, and happiness of this class, if only one fourth of the amount they now spend on stimulants were withdrawn from that expenditure and directed to home expenses?

ARTIFICIAL STONE.

In the Chemical Section, British Association, a paper on "Artificial Stone and certain Forms of Silica" was read by the Rev. H. Highton. The author remarked that the foundation of all artificial stone-making was the solution of silica and its subsequent re-precipitation. There were three kinds of silica: 1, Quartz and quartz-sand, which would only combine with alkalies at a furnace heat; 2, Flint, which was soluble by long boiling under high steam pressure; and, 3, Opal, silica artificially made, and certain beds of soluble silica found in many parts of the world. The new kind of artificial stone, called the Victoria Stone, was made by forming blocks of concrete with hydraulic cement, steeping them in a solution of silica, with a quantity of soluble silica immersed in it. The operation of this process is as follows:—The lime of the cement extracts the silica from the solution; caustic soda is liberated, which dissolves a fresh portion of silica, and again conveys it to the lime in the concrete, which thus becomes filled throughout its pores with silica, the soda acting merely as a carrier of silica to the concrete, and being capable of being continuously used over and over again for ever. By this means, after a week's immersion, the concrete gains in strength from 50 to 120 per cent., and by a longer immersion becomes harder than any natural stone, with the exception of the hardest granites and primitive rocks; much harder than the Staffordshire blue bricks, and more than double the strength of Portland stone. As to cost, where there is facility of carriage for materials, as on the Thames, it can be made at a cost considerably less than that of York stone at the quarry. A part of the pavement in the Poultry was laid with it last January, where about 70,000 persons a day, or 2,000,000 a month, pass over it. The whole of the stone of the new warehouses, 27, St. Mary Axe, is made of this material, which, for many purposes, presents great advantages over any natural stone, and it has been used to a considerable extent not only in England but in India and other countries. A company is in course of formation for carrying out the manufacture on the banks of the Thames on a very large scale.

STEAM MITRAILLEUSE.

The following particulars respecting this invention have appeared in the *Standard*, and are no doubt reliable. It is certainly over thirty years since Perkins's steam-gun was publicly exhibited in the Adelaide Gallery, Strand. No one will attempt to question the originality in the particular application of propelling shot was due to Mr. Perkins. The present mitrailleuse, however, is a vast improvement on the original. The writer, who claims to be the inventor, was led to the application while travelling from Ballinasloe to Dublin, last 6th of August, from the fact of a comparatively small piece of mechanism, a locomotive engine, being able to drag a very long heavily laden train at some 25 miles an hour.

The inventor having once the idea, the details are merely a matter of time, requiring calculation as to the proportion of the parts and the utilisation of the impulsive force. On returning to France, in the commencement of September, the plans were presented to the Mayor and Town Council of Lille. On the following day the writer was *en route* to Paris with a letter of introduction to Leon Gambetta. The plans were then given to the extensive mechanical firm of Carl and Co. Plans of the mitrailleuse were also sent to Lyons, and are now being made in the north of France. An experimental machine was made, the barrel being 4 feet 6 inches long, with a pressure of 8 atmospheres, the leaden balls, two ounces weight, were projected 350 metres. The mitrailleuse consists of 100 barrels, each throwing two hundred balls a minute, or in the aggregate 20,000 a minute. The invention is remarkably simple—not liable to derangement—the balls are supplied from a hopper, in which any number may added. The 100 barrels are worked by a small steam-engine of two-horse power. No doubt with steam up to twenty atmospheres, the balls would be projected 800 to 1000 metres; but as this high pressure demands a special boiler made with steel plates, or with wrought iron tubes, the inventor prefers to use a lower pressure, so that the ordinary locomotive boiler may be called into account. It is an instrument only calculated to defend fortifications or to defend a breach. As at this moment there are twenty of these machines already manufactured in Paris, it needs no imagination to conceive their awfully destructive powers, if brought to bear on men entering a breach, the discharging capacity being continuous. Five of these mitrailleuses would throw the extraordinary quantity of 100,000 bullets in one minute of time.

A new pulpit and reading-desk have just been completed for the parish church, Trim, by Mr. C. W. Harrison, Great Brunswick-street. The pulpit is of Caen stone, supported by five pillars of Irish red marble; the Gothic recesses are separated by small pillars of Galway green marble; the inscription is cut on the base of the pulpit. The reading-desk is of similar character, and has a text of scripture on its base. The whole is in memory of the late Rev. C. J. Bayly, vicar of the parish for many years.

CORPORATE PROCEEDINGS.

The Municipal Council at their meeting on Thursday last, took into consideration the improvement of Essex Bridge.

The Lord Mayor announced that he had received a deputation of influential citizens in a relation to a memorial from them to have steps taken for levelling and widening Essex Bridge.

Alderman Mackey thought it would be far more important to widen and improve Carlisle Bridge. No steps for doing that work had been taken. Some time ago a deputation from the council waited on the Port and Docks Board in reference to Carlisle Bridge, but they were rather coldly received. Now, rather suddenly, a move was made to widen and level Essex Bridge. He feared this was an attempt by some people to get rid of the improvement of Carlisle Bridge.

Mr. Byrne said Alderman Mackey was under a misconception. This was no sudden attempt to improve Essex Bridge. In 1866 a plan and estimate were laid before the Council by Mr. Stoney. The plan and estimate were now to be dealt with. He denied that the Port and Docks Board had received the Council coldly on the question of Carlisle Bridge. The only reason why the board did not take the matter up as warmly as the Council was that the application was made so late in the season. If it had been made in April, instead of June or July, they would have been more successful. He believed the engineer of the Port and Docks Board was at present considering a plan for improving Carlisle Bridge. But, pending the execution of that work, it was most desirable that Essex Bridge should be made suitable for traffic, and convenient to the people of the city.

Mr. Norwood moved a presentment of £14,000 for executing the work. The necessity for improving Essex Bridge had been long impressed upon the Corporation. It was needless to dwell upon the inconvenience and drawbacks of the bridge, which had been built 120 years ago, and was now wholly unsuited to the requirements of the city. The Port and Docks Board would do the work, and the plan and estimate were before them. The suburban districts within the metropolitan area would have to contribute to the cost, and not more than one-half or two-thirds of the sum presented for would be levied on the city.

Mr. Byrne said he would not vote for the presentment if they were to be confined to the plans before the house. Those plans provided for a bridge that was not suitable to the altered state of things which would result from the carrying out of the main drainage project. It was now necessary to consider the necessity of widening Essex-quay from Winetavern-street to Essex-bridge, and of widening Wellington-quay from Essex-bridge to considerably below Anglesea-street. These would be great and valuable improvements. Essex-bridge would be lowered and widened; the entire width of the bridge at present would be thrown into the carriage-way, and footpaths of ample dimensions would be constructed on what was called the cantiliver system. To effect all this it was necessary to alter the present plans for the lowering and widening of Essex-bridge so as to meet the plan of the main drainage project. He would therefore move the following:—

Provided Mr. Stoney shall amend his plans for improving Essex-bridge so as to provide for widening Essex-quay and Wellington-quay, in connection with the main drainage plan, and the Port and Docks Board shall amend thereto, and reduce their estimate proportionately, the presentment for £14,000 be made.

Mr. Bury wished to know was it intended to present the £14,000 in one sum, or in various sums as required?

Mr. Byrne—In various sums.

Mr. Norwood said it was necessary to have the presentment in one sum for the Port and Docks Board, but the levy would be in different amounts, spread over a number of years if necessary.

The Town Clerk said if the presentment passed the Collector-General should levy the £14,000 in the one year.

Mr. Dennehy urged that they could not present for the building or alteration of bridges, because such works should be carried out by the Port and Docks Board. He objected also on the ground of expenditure.

Mr. Norwood thought that they might present for the sum named, the work to be carried out by the Port and Docks Board, but the sum should be leviable in five different instalments.

Alderman Durdin strongly objected to the presentment, while agreeing thoroughly with Mr. Norwood and Mr. Byrne as to the necessity for the work; but there was not a word that could be said in favour of the proposed improvement that could not with ten-fold effect be said in favour of Carlisle-bridge, and, until the improvements proposed to be made in connection with Carlisle-bridge were carriedout, he would never vote one shilling for Essex-bridge. The reason, he believed, why Carlisle-bridge was not widened was simply in consequence of the main drainage question, and that it was necessary to prepare new plans.

Alderman Bulfin said that it was because Mr. Stoney, engineer to the Port and Docks Board, had said that Carlisle Bridge would cost £80,000.

Mr. Joseph said it would be a great advantage to that part of the city if a bridge were erected opposite the Custom House. He believed that a proposal to that effect had been sanctioned by a former lord lieutenant.

Mr. Norwood said that the matter had been considered by the Corporation and by the Port and Docks Board, and that the Admiralty had stated that, under no circumstances, would they sanction the erection of a bridge lower down than Carlisle Bridge.

Mr. Casson felt surprised at the suddenness with which this proposition had come upon him and upon many other citizens, who had all along been under the impression that Carlisle Bridge was on the point of being attended to in accordance with the views which had been brought before the public for a long time past.

Alderman Durdin said he wished to know why they should now have to pay £14,000, when Carlisle Bridge was a crying evil which had long called for attention. Everyone was led to believe that Carlisle Bridge was on the eve of being treated as it had for a long time required to be treated, and he now moved as an amendment that Essex Bridge be only improved on the condition that Carlisle Bridge be simultaneously taken in hands.

Mr. Byrne said there was no intention of shelving the question of Carlisle Bridge, nor of throwing any obstacle in the way of its improvement, and in point of fact they intended to improve it at the earliest possible moment. They, however, could do nothing with Carlisle Bridge for the present year, nor until October, 1871, and the Corporation should not allow the time to slip through their fingers up to that period without doing anything, while there were matters of great importance to be attended to, Essex Bridge being the chief amongst them.

Sir Wm. Carroll said that the Port and Docks Board had not the slighest intention of shelving the question of Carlisle Bridge, of which some members had complained.

Mr. Maclean said that they had already decided on spending £40,000 on Carlisle Bridge, now they wanted £14,000 more. He should wish to inquire where they intended to stop? He feared they were going too fast, and that the citizens of Dublin would hardly look on very calmly at the rate at which they were proceeding.

The original resolution, that the presentment be made, was adopted by 13 to 9.

Mr. Norwood read a letter from the Port and Docks Board, stating that the plans and estimates for Carlisle Bridge were in hands, and would be completed during the year, and as expeditiously as possible.

THE PATENT LAWS.[*]

Labour, physical and mental, is the creative element of our nature, and is the foundation of all value. Therefore, the price of labour determines the price of commodities, and whether commodities are raised to a fictitious price by protective enactments of the Legislature, or by protective rules of trades-unions, in both cases the consumers suffer for the benefit of producers. The workers in any trade have, indeed, a right to combine for the purpose of raising the price of their labour; but they should remember that the policy of raising wages by combination will operate against themselves when adopted by workers in other trades. If all kinds of labour were by this means artificially enhanced in price, the effect would be that wages would be universally higher and commodities universally dearer, and the receivers of wages, even if the trade of the country suffered no diminution, would be little better off than before. It is only by stealing a march on other classes of labourers that those of any particular trade can improve their position by raising the price of their labour beyond the limits imposed by the natural laws of supply and demand. We can scarcely expect that trade societies should be restrained by considerations of political economy from using every means in their power to make the most of their labour; but the liability to drive away trade bears so directly on their interests that it cannot be too carefully considered. Other things being equal, trade will gravitate to those places where labour is the cheapest; and other countries are now so rapidly approaching England in facilities of transport and in the development of mineral wealth, that the time is at hand when any forced increase in the price of labour would be fatal to the continuance of our commercial supremacy.

The sum annually spent in this country in the payment of labour amounts to hundreds of millions; and a small percentage saved out of that amount would quickly raise large capitals for investment in co-operative trade. Sir William glanced at the prospect that better education in the future would render workmen better fitted than at present for such enterprises, and referred then briefly to the acts of violence and coercion occasionally committed under the sanction of trade-unions. He considered such practices to be the exception and not the rule. Passing on to the consideration of the law of patents, which he described as another kind of restrictive legislation, Sir William expressed his own opinion as being adverse to patents, and said that, whatever difference there might be about the propriety of abolishing them, there could be no doubt that the present law with regard to them is disgraceful. Patents are granted without inquiry or discrimination; and the result is that they exist by thousands. Many of them are untenable, and others of doubtful validity; but, as they cannot be set aside without a lawsuit, a bad patent often answers its purpose just as well as a good one, and a spurious protection is acquired in defiance of law and justice. In a great number of cases the invention is so imperfectly developed that the patent remains inoperative and dormant, and simply blocks the way of other inventors; for no one will labour to give value to an invention when a patentee is lying in wait to reap the advantage as soon as the practical difficulties are surmounted. As to the alleged analogy between copyright and patent right there is none whatever in regard to obstructive effect. Copyright involves no monopoly of ideas, and does not narrow the field of authorship, but patent right most seriously narrows the field of invention. Having thus glanced at the impolicy of protection, whether applied to commerce, to labour, or to invention, Sir William concluded by deprecating all interference with liberty of action, except in restraint of offences; and by maintaining that to the greatest good to the greatest number will only be attained by leaving the social world as much as possible to the governance of natural laws.

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[*] From paper read by Sir W. Armstrong, at Social Science Congress.

ROYAL DUBLIN SOCIETY SCHOOL OF ART.

COMPETITION FOR FANS BY FEMALE STUDENTS.

As a means of stimulating a new branch of industry specially available for the employment of educated females, the Lords of the Committee of Council on Education again offer prizes for fan mounts designed and painted by female students who are, or have been, studying in any school of art connected with the Science and Art Department, viz.:—One prize of £5, two of £3 each, three of £2 each, and five of £1 each. A further sum will be expended in the purchase of a selection from the competing fans. These prizes will be awarded subject to the condition that a sufficient number of students compete; if this be not the case, the prizes may be wholly or partially withheld. The paintings are to be on a material suitable for fan mounting, as silk, leather, &c. The decoration may consist of foliage, or flowers, or these combined with landscape vignettes, animals, or figures. The works are to be sent to the Department (South Kensington Museum) on or before the 15th December, 1870: each work must be certified by the head master of the art school as being the work of the female student whose name is attached to it; or, in the case of candidates who are no longer students, this certificate must be given by some one occupying a recognized position of public responsibility, such as a magistrate, clergyman, &c. Any fan sent to this competition may, if it fulfil the conditions, enter into the competition for fans at the International Exhibition of 1871.

PRIZES FOR DESIGNS IN POTTERY AND PORCELAIN PAINTING.

Mr. Edward T. Dresden being desirous of stimulating the exertions of the male and female students of the Schools of Science and Art, in view of the Exhibition to take place in 1871, offers the following prizes for designs in pottery and porcelain painting:—

A prize of £10 for the best vase, or other large object of a similar character, for the "modelled form." A further prize of £10 for the best treatment in colour and full decoration of the same object in pottery finished complete. Both prizes may be awarded to one student or to two, one for the design and modelling of the form and the other for the decoration and painting of the same. A prize of £10 for the best design for a dessert service. The designs may be made in outline and water colour. A further prize of £10 for the best execution of the same designs, in pottery. For the prize for "painting" one representative piece of each part of the service must be executed. Similar conditions as to prize No. 1 as to one or two condidates obtaining both prizes. A prize of £10 for the best set of "plaques" not less than four, for the decoration of a cabinet or other similar object. Size of plaques to be —2 rectangular, 10 inches high by 7 inches wide; 2 oval, (or elliptical) upright, 10 inches high, 8 inches wide.

These prizes will be awarded by the Department subject to the condition that a sufficient number of students compete and the works are of sufficient merit. If this be not the case, the prizes may be wholly, or partially withheld. The works are to be sent to the Department (South Kensington Museum) on or before 15th December, 1870: they must be certified by the head master of the Art School as being the work of a student on the register of the school during a period of not less than six months. The competing works, or a selection from them, will be exhibited in the International Exhibition of 1871.

INSTITUTION OF CIVIL ENGINEERS, LONDON.

The members have just been informed, by circular, that the first ordinary general meeting for the session 1870-71 will take place on Tuesday evening, November the 8th, and that the meetings will thereafter be continued on each succeeding Tuesday till the end of May, with the exception of the 27th of December and the 3rd of January. Every member and associate has the privilege of introducing one friend to each meeting. The annual general meeting, to receive and deliberate on the report of the council on the state of the institution, and to elect the officers for the following year, will be held on the 20th of December. The members have been invited to send in any original communications they may have prepared for reading at the meetings, and have been reminded that applications for admission from candidates desirous of joining the institution can now be considered and dealt with.

Mr. William Alexander Provis, who was elected a member of this institution on the 6th of April, 1819, and whose decease occurred on the 29th ult., has by his will bequeathed the munificent sum of £500 to the "Benevolent Fund of the Institution of Civil Engineers."

"SOME OF MY WANTS."

A correspondent of the *Builder*, writing under the signature of "Mitrailleuse," recites a chapter of "some" of his "wants." They number *seventy-seven* so far; we select about one-fourth of them, as follow:—

I want the platforms of our railway stations to be nearly or quite on a level with the floor of the carriages and closer to them than they sometimes are.

I want the classes of railway carriages to be readily distinguished by passengers. A hemisphere of a white colour placed above the door of a first-class compartment, of a red colour above the door of a second class, and of a bright blue colour above the door of a third class, would seem the easiest guide. Smoking compartments might have a black band across their hemispheres.

I want railway companies to place at each station a special list of trains stopping at that station They content themselves with sticking, in perhaps some obscure place, a *general* time-table, and you may find on it the information you want if you can.

I want a better mode of raising and dropping the glass of railway carriage-doors. Perhaps the late interesting discussion in the *Builder* on sashes may afford some hint for an improvement.

I want bed-room candlesticks to be made with a receptacle for matches attached to them, and a rough place for striking.

I want the post-office to sell a cheap letter-balance. One would think that for sixpence or a shilling a balance might be sold, and guaranteed to act correctly.

I want architects always to carry the stairs of houses up to the roof. That ladder which reaches from the top floor to the roof is invariably in the cellar when a fire happens.

I want, in numbering streets, that the odd numbers should be on one side and the even ones on the other; but I do not want that No. 46 should be opposite No. 145. Divide the street, before commencing numbering, into spaces, say of one-sixteenth of a mile (110 yards), and allow twenty-four numbers to each side of that space.

I want printing points, as commas and periods, to be more distinct. A period should be a large dot almost as high as the type, a comma should be quite small.

I want books to be cut at the edges ready for reading.

I want "a.m." and "p.m." in speaking or writing of the hour of the day to be done away with. Far better to let the hours run from 1 to 24. Our clocks would require no alteration.

I want a new chair to be established at our universities to be called the chair of Sanitary and Domestic Science; and it would not be amiss to make Dr. Lankester and Mr. Rawlinson the first Professors. It would make our young clergy better than our old.

I want tickets to be placed inside cabs, so that without asking the driver a ticket may be taken.

I want proper pavements and roads to be made before houses are allowed to be built. Houses are now stuck up in fields, and years elapse before the approaches are decent.

I want milk-vendors to send out the milk and the adulterations in separate vessels, so that each consumer may mix them for himself, according to his taste.

I want shopkeepers to paint their shop-fronts often, and of a light colour, so as to help the gaslights considerably. A large retail trader in Holborn, who makes a net profit of £24,000 a-year, paints his shop-front a light stone colour two or three times a year, it is said.

I want omnibuses to place outside in large letters where they are going to, and not where they have come from. Reversible boards would do this nicely. Whether white horses should be used as a signal for one route, grey horses for another, piebald for a third, roan for a fourth, and so on, is worthy perhaps of consideration.

I want people who *practise* "vociferously" the piano, the cornopean, &c., to live a long way off from me.

I want all candidates for the office of vestrymen to pass a Government examination. Knowledge of figures, of their own localities, &c., essential.

I want—yes, I especially want—a periodic inspection of all basement floors of London. Oh, what a revelation!

I want to see the *Builder's* Parliamentary Library established; and, very particularly,—

I want a general index to the first twenty-five years of the *Builder*, including the "Miscellanea."

MISCELLANEOUS.

The Sanitary Condition of Glasgow.—The Rivers Pollution Commissioners met at Glasgow on Tuesday, and heard witnesses with reference to the sanitary condition of that city, and its effect on the waters of the Clyde. Mr. Carrick, city architect, stated that there were 97,000 houses within the municipality, and that about one-half of the area of the city was occupied by factories and other places of business. On an average, there were not less than five families in a tenement. Half the town was supplied by the ordinary ashpit accommodation. Mr. Gale, engineer to the Water Trust, stated that at present 27,000,000 gallons of water per day were being sent into Glasgow, being about 50 gallons per head of the population. Dr William Gairdner, medical officer for the city, gave it as his opinion that the high mortality of Glasgow was due in first place to the extreme poverty of a portion of the industrial classes. Then there was an enormous amount of extremely bad house accommodation, and, though the ill health and mortality which prevailed was not an absolutely necessary result of living in flats, still the character of the buildings brought together a great mass of the population. He had seen nowhere else some of the evils to be found in the worst parts of Glasgow, and did not think any other town in England or Scotland was so bad. The water supply was quite unexceptionable, but he had no doubt it would be a great improvement if they were to get rid of the sewage. He had no doubt that certain diseases, perhaps not fatal forms of disease, arose from the impurity of the Clyde, but it was not very easy to prove it. In some parts of the town more than half the deaths last year were of children under five years of age. His feelings had long been that nothing would improve Glasgow except destruction on the one hand and reconstruction on the other.

Winter Exhibition of Oil and Water Colors, at the Old Bond-street. Gallery, 25. Old Bond-street, London.—This gallery was established at the commencement of last year. The first exhibition held in these rooms was the celebrated select supplementary exhibition of pictures which had been rejected from the Royal Academy, since which four Exhibitions have been held under the management of 40 well-known artists, and 700 pictures have been sold. The present Exhibition was opened to the public on Monday, October 17th, with a highly interesting collection. A number of distinguished artists from all parts of the country have given it their support, and it seems likely that it will be as great a success as the former ones have been.

Trade Catalogues.—"One cannot but be struck with astonishment at the innumerable ways in which an enterprising tradesman appeals to the public with a view to increase his trade Printing in all its branches, assisted by the skill of the wood engraver, seems, in the present day, to be one of the media most generally employed in spreading the knowledge of various manufactures. These arts have ably been brought into use by Mr. Benson, the eminent watchmaker of Ludgate-hill and Old Bond-street, London, who has sought, by means of "Illustrated Pamphlets," (containing beautiful designs for watches, clocks, jewellery, chains, &c., with an elaborate description of every construction of watch now made), to enable persons living in any part of the world to select the watch best adapted for their use, and have it forwarded free by post."—*Sun.*

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The Irish Builder.

Vol XII.—No. 262.

Our City Graveyards and Surroundings.

SINCE the Extra Mural Act was passed some years ago, some attention, at least in London and other English cities, has been bestowed on the condition of city graveyards. The abominable state in which many of them were kept—noisome and foul, stagnant and seething in rottenness, and continuously exhaling poisonous and fatal odours,—this state of things could not continue, so at last they were partially remedied.

While in London several city graveyards have been laid out in walks and garden plots, and rendered pleasant instead of causing a revulsion of feeling to walk through, as heretofore, in Dublin, Cork, and other of our chief cities and towns the graveyards continue in the same disgusting state as they did twenty years ago. One or two attempts have been made in Dublin a few years since to remedy these things, and St. Mary's graveyard was denuded of its *dead* wall, and iron railings substituted. The tombstones were arranged in some manner, but we failed to see any approach to a garden.

The churchyards of our city can, at a very small cost, be made agreeable places for our poor to visit, instead of slovenly places. It is somewhat of a pleasure, in the summer time particularly, for one to walk through Glasnevin; but what Glasnevin is on a large scale, our old city cemeteries may be made on a small scale. Nicely gravelled walks, shrubs and flowering plants, and seats, should replace unevenness, long, lank, withered grass and matted weeds, dock thistles, and other most villanously deadly and succulent productions.

There is hardly one of our old graveyards on the south side of the city but are in a disgustingly ruinous and abominable state of neglect. It is alike on the north. Let one look at old St. Michan's historic graveyard in Church-street, where the "uninscribed tomb" of Robert Emmett is supposed to stand, as also the unfortunate "United Irishman," Oliver Bond. A few pounds judiciously laid out would put this interesting old graveyard in decent sanitary condition. As it exists at present, it is a nuisance and a danger. Grangegorman, St. Paul's, and others north are much of a sample.

Could not an energetic attempt be made at once to improve the condition of these old city graveyards? Now while the main drainage scheme remains almost in a state of abeyance, these old city burial places of our whilome citizens and worthies could be rescued from ruin.

If there be one good thing more than another with which the natives of this country have been credited, it is the respect which they ever have shown to the dead. Anything approaching desecration of the homes of the departed have been resented; and many is the fierce riot and sanguinary scene that has taken place in consequence of disturbing the remains of the dead. Let it not be shown in the latter half of the nineteenth century that we have gone far to falsify our former good practice.

A stranger, however, walking through our city at the present hour would be utterly confounded and astonished at the condition of our burial places, when he would compare it with the character which he had probably read of our people.

If there be not funds in connection with the church livings connected with these churchyards (which we doubt), very little difficulty, we think, would be experienced in raising a local subscription in the parishes belonging. None would refuse their mite to put the burial places of their relatives in proper order. It is, however, more a sanitary question with us—a question of health *versus* disease—than one imbued with sentiment.

We have always thought, and still think, that a churchyard should be a place not to repel, but to attract; not a place to shun, but resort. From the earliest times the graveyard was attached to the church, and living life sang and glorified God amidst death. Looking around, man might truly exclaim, "Oh, grave, where is thy victory; oh, death, where is thy sting?"

We have often wondered years ago how the graveyard and open spaces surrounding Christ Church and St. Patrick's were not tastefully laid out. Most of our old city churchyards are encompassed by very poor neighbourhoods with narrow streets and lanes choked up for want of light and air. A double necessity, therefore, exists why they should be made feeders and agents of health, by gardening attractions and enticements to draw the poor man's children forth from pestilential homes to healthy outside enjoyment. We would like to see all our city graveyards little oases of vegetation and flowers in the midst of the dreary desert of city life. The poor have too little open spaces at present, and unfortunately the few there are are getting less and less every year. Look at our squares in this city completely monopolised by fops, nursery maids, maiden aunts, and some dolorous do-nothings. The right of way for the poor is stopped; there is no stile or memorial path through these parks, like through the old meadows of our country, for God's poor. A surly Cerebus or inflated turnkey warns "beggars, brats" and tradesmen's "kids" to keep off, and not dare to come between the wind and refined nobility. Not so is it in Paris, nor with few exceptions is it so in London. The parks are the people's right, the squares are the people's privilege, even if the workhouse be eventually the poor man's doom. In the squares and parks of Paris the *ouvrier* and the count walk side by side; the blue blouse rubs against the rustling silk, and mechanical skill does not stink in the nostrils of titled incapacity. Oh! Dublin, when will your shoddy-clad and shoneen-spirited "genteels" look mankind in the face, and, with a warm shake hand, send the hot red Celtic blood tingling through the veins of their honest but poorer fellow men. Will it be left for the graveyard at last to level distinctions, and for a future Diogenes to search in vain for Alexander's dust? How long will Homer nod, and corporation Neroes fiddle. We have had warnings, and hens as well as geese have cackled, but the Capitol is still in danger. Disease is still making inroads, and dirt grows rampant, and the classes that could contribute to stay the evil will find too late for their own safety that their escape is cut off by the weapons that sanitary energy would have rendered harmless.

STREET ARCHITECTURE.

THOSE who first "colonized" St. Stephen's Green, and began to erect houses round the squalid field surrounded by an open ditch—a mortuary of dogs and cats long gathered to their fathers,—would appear to have enjoyed a happy immunity from municipal restrictions as to lines of frontage, and a pleasant diversity of purpose in the way they turned their mansions to the street, thus leaving nooks, corners, and angles in some places as nuts for future architects to crack. Mr. Lynn's Unitarian Chapel was one most skilful and happy instance of adaptation to force of circumstances; and now the new building which the enterprise of Messrs. Robert Smyth and Sons, wine merchants, have erected under the auspices of Mr. Thomas Drew, A.R.H.A., as designer, has furnished another instance of how awkward conditions of a site may be actually converted into conditions of excellence and novelty when grasped with originality. Messrs. Smyth and Sons, with a confidence that is worthy of all praise, would appear to have entrusted their building to the devices of the architect, without imposing vexatious trammels, and the result—as would appear to be universally recognised by the critics of all the daily press of Dublin—is one of the best specimens of street architecture we have seen for a considerable time. The entire structure is bold and effective, and ingeniously designed to meet the awkward acute angle formed by the existing lines of frontage, and it derives much advantage from the fact that it stands out from the houses on either side of it. This was effected by the judicious appropriation of the area and the ground occupied by the steps leading to the house, on the site of which the new offices of Messrs. Smyth and Sons now stand. The general effect of the exterior is vigorous and bold in detail. It is four storeys in height. The lower storey is built of Dalkey granite; the three upper storeys are of red brick, faced with limestone, and are lit by triple-light windows, with enriched and carved stone mullions. The lower portion of Messrs. Smyth and Sons' present premises have been adopted as the key-note of the style, but in the new building *force* has been given with skill to the weak detail of the old one, without sacrifice of uniformity. The style so developed is somewhat of a Jacobean character, the moldings and details of which have been fearlessly handled with a Gothic vigour. Like the Hibernian Bank and Messrs. Gilbey's well-known warehouse, and Mr. Rogers' Caledonian Insurance office, this building is one of those that points hopefully towards the development of a really healthy Victorian style, borrowing breadth and simplicity of arrangement from Italian renaissance, and bold handling in detail from mediæval feeling. The upper storey is an arcade of semicircular-headed openings with shields in the tympana and surmounted by a frieze (from panels in which supports for scaffolding for painting or repairs can be projected at pleasure) and a bold cornice. The whole crowned with a kind of Mansard roof, the lower portion of which is covered with lead dressed over rolls, and has picturesque dormers of stone. The lower storey contains the offices, sample-rooms, &c., of the Messrs. Smyth, and the upper storeys consist of chambers on what are called the several "flats." The entrance-hall is approached by a bold doorway, and the hall is paved with Minton's encaustic tiles. The lower or principal office is entered by double doors of oak, with plate-glass let in in the upper panels. The interior of the apartment is extremely elegant and novel, and is lit by a large three-light window looking to the south-east, and a single-light one on a line with the principal entrance. These and all the other windows in the front of the building are furnished with plate-glass. The mantelpiece and grate are of rather mediæval design; the former is of Caen stone richly carved, and sustained by Irish red marble pillars with highly decorated capitals; the fender is of red Mitchelstown marble, and the general appearance of the grate, mantelpiece, &c., is bold in the extreme. The furniture has all been specially designed by Mr. Drew, and, while perfectly novel, never in even a trifle degenerates into anything "acrobatic," mediævally eccentric, or unsuitable to staid, sober office purposes. The articles most worthy of examination are a "buffet" in the sample room, of pine, arranged for holding glasses, with a trough and marble top and lockers for samples; a stand for champagne; a "library" for old ledgers. In the interior room other cases for wine, and desks for Mr. Brooke the managing partner, the cashier, &c., in divers woods—oak, pitch pine, yellow pine, and inlays of holly, ebony, laurel, &c., cleverly introduced. The table and chairs of the front office are in oak with similar inlays, and in both design and ornamentation are perfect studies in themselves. All have been manufactured by Mr. George Moyers, builder, South Richmond-street, to whom the construction of the offices, from designs furnished by Mr. Thomas Drew, A.R.H.A., architect, was confided. The outer office is divided from the inner one by a triplet of arches, and an elegantly carved woodwork barrier of about 3 feet in height. The sample room, lit from the top, is admirably adapted for its purposes; and from it, by means of tubes, immediate communication can be had with the extensive cellars beneath, and with every other part of the premises of the firm. The upper floors are divided into distinct sets of chambers, and admirably lit, heated, and ventilated. A kitchen, scullery, and "hanging yard," is provided at the top of the house, with lifts, dust-shoot, &c., from top to bottom.

The building which we have above briefly described, and which cost over £4,000, is an honour to the enterprise and public spirit of Messrs. Smyth and Son, and reflects high credit on the architect and the builder.

MR. WATKINS' STUDIO.

Having so fully described the front premises, we must in justice say a few words as to what is comprised in the extensive building in rere. The first landing from entrance hall having been reached, approach is had through a handsome vestibule to a fine gallery 67 ft. by 21 ft., formerly known as "Dillon's Fine Arts Gallery," and now occupied by Mr. Joseph Watkins, sculptor, a gentleman not altogether unknown in the art world. In this very suitable gallery we had much pleasure in admiring striking busts of Irish celebrities modelled by their countryman. Many well-known faces rendered permanent by art—men of all professions—may here be seen, beaming with life from their pedestals. Nor is the sculptor less happy in Irish beauties: his busts of ladies of rank and of children will be admired by all. What pleases us most is the happiness of expression so truthfully caught and fixed in marble for future generations to gaze on. Mr. Watkins' studio will be found an attraction to all art-lovers. We wish him every success, and hope he will receive the amount of patronage to which he is so well entitled.

LEWIS'S AUTOMATON PENTAGRAPH.

Our illustration is a lithograph of Mr. Joseph Lewis's Automaton Pentagraph, which is well described in a circular recently issued. By it many of our drawings have been made to suit the size of our pages. The practical value of this invention to a lithographic establishment may be briefly stated in a few words; for instance, a bill heading, when once engraved, transfers made or impressions taken upon the elastic transfer medium can be altered and transferred to stone, to fit any size of paper. Show cards can be reduced to print as business cards. Transfer impressions taken from wood engravings or type, reduced and transferred to stone, yield printed copies as fine as engravings; crayon or chalk drawings, when drawn to an enlarged scale, and printed on elastic transfer medium and reduced, when transferred and printed from stone, are superior to anything that could be done by the ordinary mode. This is the only process by which duplicate transfers of chalk drawing can be accomplished that yield impressions superior to the original drawing. Engravings executed to a medium size may be used for obtaining reductions and enlargements, also contorted and metamorphosed, and used for any desired purpose without the expense of engraving duplicates for each. Manufacturers using various sized package labels or tickets, may have their show cards reproduced as labels for each packet, as suitably as if engraved for the purpose, but possessing this great advantage, that each label, though different in size, presents the same character, thereby rendering imitations difficult and more easily detected. Mr. Lewis, whose name we have mentioned, has just invented an ingenious machine for printing from the lithographic stone: this he has entitled the "Little Lewis" machine. It will, no doubt, soon be in general use.

NOTES OF WORKS.

The foundation-stone of the new Wesleyan Methodist Church and school-house, Kingsland Park, was laid on the 3rd instant by Frederick Stokes, Esq., J.P. The church will be in the Early-English Gothic style; its dimensions will be 85 ft. by 45 ft. Besides a free grant of the land, Mr. Stokes has contributed £50 in aid of the building fund. Mr. John M'Curdy is the architect; Messrs. Beckett, of South King-street, the builders.

Dame-street will soon be a street of banks and insurance offices. The demolition, by Mr. John Nolan, of houses at the west end for the erection of premises for the Munster Banking Company is being proceeded with. The ground taken is of an L-shape, abutting into Palace-street—the intervening premises being those of Mr. Morrison, hatter; and we think (bearing in mind that this is a great thoroughfare) the said premises, crutched up as they are on the four sides, are in a very dangerous condition. Why have not the company had the spirit to purchase the whole block, which could have been procured on easy terms, and let the work present a more massive appearance? This will be the third insurance building which Mr. Deane has designed for this thoroughfare, the others being for the Liverpool and London and Globe, and Crown offices.

We are glad to see that there is at last a move being made to erect the Smith O'Brien monument. The site selected, as we have before mentioned, is a very suitable one, viz., between the long crossings from Westmoreland and D'Olier streets near Carlisle Bridge, and where a three-branch lamp formerly stood. We presume there will be some means provided for lighting this spot. The figure of this illustrious Irishman stands about 10 feet high, and has been for some time finished at the studio of Mr. Thomas Farrell, Lower Gloucester-street, on whom it reflects great credit. Mr. J. Cunningham, of Dalkey, is putting in the foundation, and erecting thereon a monster block of granite from his district, for the reception of Mr. Farrell's work, which we may expect soon to see in its place.

ACCIDENTS.

The works on Sir John Rogerson's-quay, for which we believe Messrs. Monk are contractors under the Port and Docks Board, has been the scene of a recent accident. On the 8th inst. a man named Richard Proctor, while engaged on the overhead travelling crane, fell therefrom a distance of 40 feet. The injuries were fatal, he having survived but one day after being conveyed to Sir Patrick Dun's Hospital.

William Tang, a sawyer by trade, died suddenly on the 8th instant while engaged in following his avocation in the yard of Mr. George Thompson, Cole-alley. He had been complaining for some days previously.

On Saturday morning last a man named Patrick O'Brien, who was engaged at work on a scaffold in front of the house 2, Upper Abbey-street, accidentally fell to the ground, a distance of 30 feet. He was rendered insensible by the fall, and was conveyed to Jervis-street Hospital, where it was ascertained that no fatal injuries had been sustained.

LUMP-CONTRACTS AND THEIR SUBSTITUTE.

(From the *Building News*.)

A glance at the above heading may suggest the question, what is there so essentially bad in a "lump-contract" that it should need not merely a reform but a remedy or substitute? A lump-contract is the very thing that nine people out of ten desiderate. It is to them a sovereign preventive of future misunderstanding and dispute. Reckless parliamentary agents and engineers will indeed call a cab off a stand, jump into it without asking "what's to pay?" and ride ever so far "to fair schedule of prices or unfair measure and value;" but steady-going people will do no such thing. Pater, or any way mater-familias, will insist on cabby's definitively tendering for the work in a lump-sum. The system is being applied wherever practicable to all wants of daily life. It is the desideratum, as we have said, of nine people out of ten.

This being so, let us inquire who are the people who may be said to be dissatisfied with this very popular system. We have but to look over the past month's pages of our own and of every other professional journal to see who they are. They are our architects, builders, and clients; and to this list of malcontents we will add our building-surveyors. These all inveigh, more or less, against the scandals that somehow (with no one to blame, as usual) have beset the highly popular system. There is hardly an architect, a builder, or a building-surveyor of any business experience that cannot narrate grievous cases of squabbling or of fraud that have arisen out of the abuses of the system. If a lump-contract ever does end satisfactorily "to all parties concerned," it is perhaps because the architect and his builder, both men of long practice and experience, have fallen in for the nonce with a real sucking-dove for a client.

It is a disgrace to architects and building-contractors that a man with capital and a wish to invest it in building cannot even touch brick and mortar without exposing himself to a sea of troubles. People must build, however, and some system must be devised for their doing so in tolerable comfort and under ordinary conditions—that is to say, with clients who will have their whole pound of flesh, and a little more if they can get it; architects who are ignorant, timid, or unscrupulous, and builders who will scamp work, if you'll let 'em. Such as these there will always be till the millennium; and we can't wait for it. We must go on building. The only question is how—by day-work, by schedule and measurement, or by lump-contract?

Professional readers know well enough that building operations are too intricate, too much beyond the ken of the lay public, to afford one even a colour of excuse for advising a client to build by day-work. Builders are honest men in their way; but only in Utopia could we hope to start a large building by day-work, if we cared at all to know when it would be finished or what it would cost. Architects, too, are honest men, but most of them are a trifle—just a trifle—too selfish and too lazy to be trusted with any large building to be erected by schedule and measurement. Some forty years ago the experiment was tried, or was in full force. It worked well enough for the builders, often ruined the clients, and demoralized the architects. Buildings were roughly designed with elevations indeed, but very often without sections, nearly always without specifications, always without details, and commenced with, if any estimate at all, a mere approximate estimate founded on these loose documents, not worth the paper it was written on. The building "went up," without too many drawings to elucidate its constructive requirements. The works were measured up at irregular intervals, and there came in time an inevitable veritable "day of wrath," quite "unbeknown" to the client, and equally so to the often young and thoughtless architect, when the structure, perhaps only wall-plate high, had consumed the whole intended outlay! Then it was that the architect, erst on such good terms with his enraged client, could scarce look him in the face, much less consult him about the completion of the work. In those bad old days, in fact, the works were not always completed. They remained in carcass for years as So-and-so's "Folly," like the palace seen out of window in Hogarth's "Marriage à la Mode," to be pulled down again for very shame, or at best to be bought up and completed somehow or anyhow by some bargain-driving speculator; and then in time the "folly" of Mr. So-and-so was forgotten. There have occurred many such cases. This system (of schedule and admeasurement) might be all very well if every Mecænas were a Vitruvius in himself, and both could and would look after his architect and keep him up to the mark with his drawings; but to say this is to beg the whole question, as such men would not employ architects at all—why should they? The system came ultimately "to grief." The public, who wanted to build, would not have any more of it; and they were wise. It was not the builders, nor the architects, but the public that held the purse that some forty years ago set aside the measurement system, and insisted on the introduction of the existing one of lump-contracts. This latest method answers the purpose of public bodies or committees. These gentlemen rejoice to hear they have succeeded in erecting an exceptionally cheap building by the loss of an unfortunate contractor, the victim peradventure of some omission in his tender, or of what is worse, a too scanty bill of quantities, with which, as matters go, the "board" and their architect have "nothing whatever to do." Some very saddening tales of this kind might be narrated, especially in relation to edifices built by lump-contract for parochial and cemetery boards. The hardness and insensibility of these boards is extraordinary. They ruthlessly cut down the commission of their architects, yet make its payment subject to impossible conditions: they encourage the employment of "scamping" or "jerry" contractors; and, at last, have fallen foul of the very building surveyors. Quite recently they have taken to the disreputable course of advertising for the lowest tender for computing the "quantities"; which, if they would permit these documents to be recognised and incorporated with the specification (as was done in the case[*] of the Royal Exchange) might be all very well. But the surveyor, "fortunate" enough to get the job at a preposterously low commission, is made by these worthies to execute a written contract, guaranteeing the efficiency of his ill-remunerated services, for which he is to be responsible, not to them, his employers, but *to the builders!* With this last feat of "Bumbledom," we have the entire system of lump-contracting brought to its climax, and fairly run to seed, like German marriages for our princesses. These over-reaching parochial boards never recede from a cunning position of fence once taken. Even now we hear of ratepayers complaining that any building surveyor (however substantial or responsible) should receive 2½ per cent. for issuing a bill of quantities; and no wonder, when workhouse guardians and asylum committees can get these documents issued by a surveyor "responsible to the builders" for a commission of three quarters, or of even half, per cent.! It would be the sheerest waste of words to explain in a professional journal how nothing short of the creation of a body of swindling surveyors is to be expected from the adoption of this latest parochial movement. People who will do work for nothing, or next to it, have usually nothing to lose. By a cruel refinement these workhouse and school boards ferret out a special class of men from the usually respectable ranks of the Metropolitan building surveyors; and, having got them and well skinned them, they hand them over in their helplessness and impecuniosity to—ye gods, be "*responsible* to the contractors!" Can anything be more subversive, in its way, of public credit? Would any one of these committee-men set about insuring *his own life*, or *his own house*, on the like principle?

Individual capitalists not infrequently act quite otherwise; and express their disapprobation of the lump system. They require simply to have in a building contract all they bargain for, and to pay justly for all they have. They find that by this mode of contracting, replete with its last invented evils, they obtain neither of these objects; while architects, contractors, and surveyors, are all being ground to the dust by the system.

The plain truth is, that a lump-contract, popularly held to be conclusive and unalterable, is not so at all. It is a delusion to expect it to be so, as every architect knows perfectly well. No building we ever heard of has ever been completed as first designed and contracted for, or ever been paid for by the discharge of its original contract price. The reason is plain enough to professional men; but the unprofessional public cannot understand it. An architect's client orders a phaëton, or a gold watch, to be respectively built and manufactured at an agreed price. Each order is duly executed and for the settled sum. The cash is paid down, and there's an end of the matter. "Why," says he, "can't I have for an agreed sum a house, or a town-hall (or a lunatic asylum, while I'm about it), supplied fit for use and occupation like the watch and the phaëton?" We all know why he can't; but *he* doesn't: he thinks it very hard, and builders and architects the greatest humbugs in existence. Let us ask our lively First Commissioner what he really thinks about them. We all remember how this very question bothered the right honourable gentleman's predecessor, Lord Llanover; and what a martyrdom he imposed on Sir Charles Barry in his furious efforts to get to the bottom of the mystery. He discovered that Sir Charles was always altering his details, like a modest and thoughtful man as he was; and he made up his mind, did Lord L., to issue no more orders for Government works till every one of the details had been drawn out and irrevocably settled upon—a thing nearly impossible, and if possible, preposterous. Which of us would like to see *Mr.* Charles Barry's Gothic details of 1833 brought out of a pigeonhole to be applied to the completion of *Sir* Charles Barry's Houses of Parliament?

This bugbear of extras to a lump-contract sits more or less enthroned in every English architect's office—an anxious fact for architects, and a very, very serious one for contractors. It is at the bottom of nearly all the heart-burnings and squabbles that from time to time crop up in the building world. Many an architect who, if cash were plentiful with him, would sacrifice his own private resources rather than see his fair-dealing contractor undergo a known loss of payment for an "extra," will shrink in cowardice from certifying for it in the face of a greedy unscrupulous board or committee. He, à la Barry, will con over and superadd to his details; but alas, when it comes to making up the balance-sheet, he will hesitate to disturb the phaëton and watch theory he well knows his client has imbibed.

Some builders and the British Architects are, so we hear, going to furbish up and rehabilitate the lump-contract system. They will never succeed. It has become so rotten, especially in the metropolis—mainly from the shortcomings of the Institute itself—that we quite anticipate it will collapse, like the day-work and the measure and value systems that preceded it. Architectural practice, as town (not country) architects are bent on pursuing it, is tabooed in high places; architects themselves are pooh-poohed and set aside with a vengeance. Why is this? Because architects—Institute architects especially—not only allow themselves[*] to ignore the money-details, the quantities, the prices, &c., that make up the lump-contracts they have to administer, but have grown actually proud of their ignorance. They leave the details of their inevitable extras and omissions to be settled how they best may, between builders and building surveyors, pluming themselves, like the roysterer in the play, on being

> Ill at reck'ning:
> It recks o' th' spirit of a tapster.

Meanwhile they are being, year after year, pushed out of their true places as arbiters in what ought to be their own "little courts of equity," to which both builders and capitalists ought to resort with confidence for impartial treatment. An architect who "cares for none of these things," with Gallio, will, of course, never be consulted about them. He will settle down into a simple designer, or, worse, a mere draughtsman, with his pencil and his sweet voice subservient to his patron. His hand will be naturally against every builder, and the hand of every builder (with a surveyor at his back) will be against him. It is not a satisfactory state of things; nor can it be remedied by the drawing up of arbitration clauses, nor yet by the binding up of the quantities (not those of the architect, but of the contractor's surveyor) with the specification. These expedients will only tend to still further complicate the already intolerable system. Is there no remedy by which we may hope to keep honest patrons, architects, builders, and "quantity-takers" unscathed by any of the evils we have depicted? Can we not dispense with the unelastic, "unalterable" lump-contracts, which the client will always persist in regarding as final; and the equally unelastic bill of quantities, which the (London) architect will not even look at, and which the contractor, under the circumstances, will not have overhauled to his prejudice?

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[*] See Donaldson's "Handbook of Specifications."

[*] See the President's Address at the Institute, 1869.

THE GIANT'S CAUSEWAY.*

The greatly controverted problem as to the cause of the columnar formation of that portion of the earth's crust, known as the Giant's Causeway, County Antrim, has again been brought before the public, in communications addressed to our contemporary the *Belfast News-Letter*. As will be seen, the answer to the vexed question is still a negative one. Mr. H. P. Malet writes as follows:—

It has been supposed that these stones were ejected from the earth by volcanic action in a molten state. This is defined by Sir C. Lyell, Bart., as "the influence exerted by the heated interior of the earth on its external covering."—*Principles of Geology*, vol. i., p. 577; and in vol. ii., p. 221, he says:—"In speculating, therefore, on the mechanism of an ordinary volcanic eruption, we may suppose that large subterranean cavities exist at the depth of some miles below the surface of the earth, in which melted lava accumulates."

Experiments made in mines and wells have given rise to the idea that, because there is an irregular progressive heat in these places, it must go on increasing till, at the depth of twenty-five or thirty miles, it would melt basalt and granite, and so keep a supply of lava ready for eruptions.

Well may Sir C. Lyell use the word "speculating," for a more mythical speculation has never been placed before the world than this interior heat of the earth. A few words will explain it.

Late experiments have shown us that the sea bottom is cold at great depths. Man, in digging wells and mines, has never gone below the deposits which rest upon what was once the sea bottom. It would be strange if these deposits had monopolized all the warm bed of the ocean, and stranger still if the fact of a deposit could extract heat from the cold bottom of the sea.

If a universal heat existed in the interior of the earth, it would be felt at the depth of two or three miles in the ocean sooner than in excavations made by man of only a few hundred yards in depth. So we come at once to the first conclusion, that there is no heated interior of this earth, as defined in the *Principles of Geology*.

There is, however, heat in the earth, and the solution of it is easy. It has been proved that air can be heated into flame by pressure. All the deposits—of which the dry land is formed—contain more or less of organic matter, with their gases. All of this is subjected to more or less pressure, so that the gases are liable to heat.

There is no occasion to explain here all the consequences of this heat, from some of which our volcanic actions and our hot springs occur; but it will be readily understood how this natural and unavoidable system accounts for the varying irregular heat within the earth, which has so puzzled our great geologists in their discoveries; that heat increases in one place at the rate of 1° in 50, in another at 1° in over 200 yards. It has also been proved that there is greater heat in coal than in metallic mines—all of these irregularities being inseparable from my system.

The second conclusion is, that there must be heat in the deposits of the earth; and I now proceed to show that the stones of the Giant's Causeway are not formed from this heat.

It has been shown by science that the ejection of molten rock alters the character of those rocks with which it comes in contact. There are, in the white limestone cliffs above the Giant's Causeway, columnar stones exactly similar in constitution to the columns in the sea. If they had assumed that shape from a molten condition, the surrounding lime must have been calcined—but it retains the same character while in contact with the columns as it does at any distance from them. These columns, then, were not ejected in a molten state while the lime deposit was there, and they were not ejected before this time, because the lime is all around them. It has been proved, by late experiments, that molten rock assumes varied characters, under varied degrees of cooling. In the vicinity of the Giant's Causeway there are many rocks of the same character; so that if one had been in a molten condition, all the rest must have been in the same state; but, in the Causeway stones, there are proofs of different seasons, or times of formation, so that we cannot suppose that all periods of ejection met the same temperature of atmosphere. Again, some rocks are larger than others—so that inequality of size and temperature must have produced varied characters in these rocks if they had been formed from a molten state.

For these reasons, and as there are no signs of volcanic action in the vicinity, I come to the third conclusion, that the stones of the Giant's Causeway were not formed by the action of heat, either of local or general character.

As it is of little avail to destroy a theory without giving the true interpretation of a natural phenomenon, I propose now to give it in a few words. Whenever this character of rock obtains, either in a vertical or horizontal condition, there has been, or there is, a rough weather-beaten coast; some rocks are triturated into sand, and some into mud. In these states they mix with the water, and are eventually gathered by it and deposited in several localities, as we see everywhere along the sea shore. As these deposits are made now, so they were made thousands of years since, when the whole region of which I am speaking was under water. The basaltic rocks were converted into mud, and deposited by the tides and eddies in quiet places. No sooner were these places filled to certain levels than the currents, assuming a different character, deposited upon them other materials. In this vicinity a lime deposit ensued. As the basaltic mud below the lime was of a softer and more plastic nature than the granulated lime collecting over it and around it, it became susceptible of the pressure, and rose through the lime exactly as matter rises through a cullender. As this mud rose in globules through the lime coating resting upon it, each globule spread till it touched its neighbour, when it necessarily and unavoidably assumed the shapes in which we find it. As the lime deposits were renewed every season, a fresh pressure on the mud was unavoidable, and, rising through the orifices already opened, it drove the formation of the previous season before it, so that, in this yearly action, we have the cause for the irregular divisions between the stones, as well as for the concavity on the top of the fresh ones, and the convexity on the bottom of the old ones, the latter being firmer than the former. Thus, season after season, as the lime sediments formed, the pressure was renewed, and the same process was continued till all the basaltic mud of the locality was used up.

The Causeway, which we now find stretching out into the sea was once mud, and covered with lime secretions similar to those which still envelope the basaltic columns in the face of the white cliffs; as the growth of dry land increased these mud and lime formations hardened into their present condition; the basalt remaining after the lime was removed by the ordinary process of denudation, and again opening itself as a temporary breakwater to the never-ceasing wash of the Atlantic wave.

In this short description is the whole secret of vertical and horizontal rock columnar formations in all parts of the world. I enter into no further details at present, so that anyone wedded to the old fire cause of production may bring forward what he pleases against this natural system, before it is complicated by the many minor details which dovetail into each other in the most minute degrees.

Here is how Mr. William Gray, a member of the Belfast Naturalists' Field Club, disposes of Mr. Malet's theory:—

Of all the absurd nonsense (he says) ever written on the above subject, that by your correspondent H. P. Malet seems the climax, and would be beneath notice if it originated with anyone but a geologist. Mr. Malet pretends to "destroy" what he calls Sir Charles Lyell's "mythical theory," and concludes "that there is no heated interior of this earth," because "late experiments have shown us that the sea bottom is cold at great depths." Surely the temperature of the *sea* is no test as to the heat of the *earth*, when we know that the internal heat does not perceptibly affect the surface of the earth. Even if it did affect the heat of the sea, the coldest water would still be found at the bottom. Mr. Malet's second conclusion is equally erroneous—"That the stones of the Giant's Causeway are not formed from heat," which he arrives at by alleging the existence of conditions that do not occur in the locality, and referring to the absence of conditions favourable to the volcanic agency, which really abound in the neighbourhood, which indicates either a deliberate mis-statement, or else a deplorable want of observation. For example, he minutely describes what he calls "the limestone cliffs above the Causeway," and explains the effect of their contact with the basalt; whereas we know full well that there is not a particle of limestone anywhere near the Causeway from the sea level up to the crest of the highest cliffs of the Causeway range. Nor is there a shadow of proof for the supposition that limestone ever existed there. On the contrary, there is everything to indicate that the entire range of cliffs was formed ages after the deposition of the limestone which occurs below the basalt all over the County Antrim, and portions of Derry and Down.

He alleges, too, that "whenever this character of rock obtains, either in a vertical or horizontal condition, there has been, or there is a rough weather-beaten coast." This is not true, as any one may prove who has eyes to see, for the columnar trap occurs in various parts of the interior of the country, which, within the longest range of geological time, never were weather-beaten coasts. It occurs in a horizontal position in a dyke in our own Cave Hill quarries, where no mud, or sea, or cullender could reach.

His third conclusion is, that "there are no signs of volcanic action in the vicinity." Although there is a regular dyke traversing the Causeway itself, and there are numerous examples of where the basalt has altered the character of the rocks it came in contact with; and although there is an immense variety in the lithological character of the rocks surrounding the Causeway, all of which are the very marks by which Mr. Malet himself would identify volcanic rocks. Having thus "destroyed" the volcanic theory, Mr. Malet proceeds to substitute his theory of basaltic mud rising in globules through a coating of lime, and which is so far-fetched, inconsistent with observation, and untenable, that its very recital demonstrates its absurdity, and leaves us no desire to be further illuminated by Mr. Malet's "Circle of Light," which he asks us to consult.

Mr. Malet, replying to Mr. Gray, in a letter published in the *News-Letter* of the 26th inst., states that he still adheres to the opinion "that there is no internal inherent fire beneath our feet," and that "there is much lime in these (the Causeway) cliffs."

Another writer, over the signature of "Dunluce," contends that—"The latter part of Mr. Malet's article about the formation is the columns and their jointed structure of the most ingeniously improbable theory I ever heard of. If it were correct, limestone must be of much greater specific gravity than basalt, which I am not aware of; and what would cause the basalt to ascend in globules (he might have called them globes) fifteen or twenty inches diameter, instead of in small particles, as would be the case in the modern working of nature, would I think require another original theory hitched on to the first to keep it out of the mud. If any such action would have occurred, both the basalt and the limestone must have been quite liquid, in which case the globules would have united when they came in contact, at which time he evidently supposes them to be still liquid, when he states that the subsequent deposition of lime on the already formed columns caused the formation of more. About the strongest evidence of the incorrectness of Mr. Malet's theory consists in his stating that by it is explained the cause of the stones being (?) concave on the top and convex on the bottom. This might do for the antipodes, but we aborigines of the locality know that there is no such rule at all—there being about enough of the convex on the top and concave on the bottom to enable any one fond of argument to say that the former was the exception."

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* From the *Coleraine Chronicle.*

AMERICA AND HER HOSPITALS.

THE introductory lecture delivered at the opening of the session of St. Vincent's Hospital School, by Dr. E. D. Mapother, F.R.C.S.I., embraced much valuable information respecting America and her hospitals, gleaned by the author during a brief sojourn therein. We reprint some portions of it:—

Having just returned from a marvellous country, I thought a brief account of the state of our profession there might not be uninteresting, although it be hastily gathered and fragmentary. In America, the licensing bodies are, without a single exception, teaching bodies as well. This is as it should be, provided the teachers are not the sole examiners, and that they do not examine the candidates separately and privately, as is usually the case. . . . . . The sole title conferred is that of M.D., and this tends to prevent the unwise separation of medicine and surgery, which should be studied and practised, at least at the outset, together. In Canada, as in other of our colonies, associations of medical men are permitted by Government to examine and register those about to settle, or to reject those who do not possess a diploma or who fail to pass a practical examination. In Ontario province an act has just passed, which amalgamates the eight licensing bodies. This affords a precedent for the State examination or single portal, which last session it was attempted to establish with us. I regret to say that in some such examining boards in America half the examiners are homœopaths and eclectics, persons who profess to select what is best from each system—their guiding principles, however, not being apparent. . . . . .

The following numbers, from the *Boston Directory* for the present year, will give a fair estimate of the status of the profession. In this most intellectual of American cities there are 241 regular physicians—that is, members of the Massachusets Medical Society—40 homœopaths, 11 eclectics, and 55 female physicians. I have now to mention a few of the medical institutions of the country; and firstly, the museum at Washington, which excels anything of the kind in Europe. This will appear to you from these splendid photographs, some hundreds of which have been presented to our College of Surgeons by the United States Surgeon-General; and I am happy to say that he informed me of his intention of sending many others according as they are published. Some of these pictures show great artistic ingenuity; for instance, that in which both aspects of the body were taken by the aid of a mirror. All the injured parts from those killed in the war, and the parts removed from the wounded, are preserved; and in the latter case most accurate records of their histories are kept. About one hundred clerks in the building keep the pension lists, and the progress of any case can thus be most easily traced. Many of the surgeons of the American hospitals send preparations, so that the collection is rapidly increasing. These are the preparations and photographs of the eight successful amputations through the hip which were performed in the war. I examined one of the porters of the museum, from whose arm seven and a-half inches of the humerus had been excised with most wonderful success, for a most useful and very slightly shortened limb remains. The collection of crania is immense, and all are computed by the relative position of the foramen magnum—the test of development which Dr. Otis, the learned curator, regards as most accurate. Besides ordinary photographs, there are a vast number of sun-pictures of objects and tissues magnified by the solar microscope, and taken under the superintendence of Lieut.-Colonel Woodward, M.D., the medical curator, so well known for his work on the diseases of the American campaign. The building was formerly Ford's Theatre, in which that most lamentable crime, the assassination of Abraham Lincoln, was committed. The medical museum at Boston is also most excellent, and it illustrates the greatest case of retention of human life under terrific injury ever recorded. An Irish labourer was ramming powder with a crowbar into a hole in a rock about to be blasted. The powder exploded, and the crowbar (four feet long and two and a-half inches in circumference) passed through the skull and out through the interparietal suture and twenty feet into the air above! The brain projected considerably; yet, notwithstanding this fearful injury, the man survived in good health for twelve years and a-half. A photograph of the skull and the crowbar forms the frontispiece of the catalogue, of which this copy was lent to me by Professor R. W. Smith, whose splendid writings are as well known in America as they are in the university which he adorns, or in the Pathological Society, which owes its existence to him. This preparation surpasses in wonder that in the museum of the London College of Surgeons, of the chest of a man transfixed from one armpit to the other by the shaft of a gig—an injury survived for ten years. The museum first named, and that of our college, vastly surpass any anatomical collection in America, or, I may add, elsewhere.

The Harvard University, near Boston, is the oldest and most flourishing of the American seats of learning; the number of professors being about sixty, and the students one thousand. Amongst its medical teachers are such illustrious men as Agassiz, O. W. Holmes, Bigelow, Asa Gray, and Wyman. The zoological museum, directed by the great naturalist, is most splendid; and in the department of fishes, exceeds anything in the world. Professor Holmes is as good an anatomist as he is poet and essayist, and I can award no higher praise. Many of his poems relate to his profession; for instance, the inimitable *Rip Van Winkle, M.D.*, read at the last opening meeting of the Massachusets Medical Society.

The schools in the States are far too numerous; thus in Louisville, a city not one-third the size of Dublin, there are three—one rather oddly placed,—namely, in the meat market building. Their multiplicity has led to a downward competition; and the fees are about £7 a year, and the whole sum for medical education and graduation does not reach £20. The fees in the Cincinnati College are lower still; it had last year forty-five graduates, whose fees amounted to about £400, giving each of the professors £36 yearly for his remuneration. From even the most strict schools great numbers of graduates proceed. Thus in Bellevue, New York, and Jefferson College, Philadelphia, over two hundred are annually capped. In the latter the surgical teachers are such far-famed men as Cross and Pancoast. The cheapness and too great facility of the smaller schools allow untrained persons to graduate, and if they find the trade dull they turn to others. The clown of the circus, while I was at Washington, was a medical doctor! I wish I could believe that professional outcasts always follow callings as innocent.

The States are a high-pressure place, as everyone knows; and the most striking medical instance of it is, that there is a summer session for similar work to that of winter, and in Bellevue Hospital, New York, even a third or autumnal session. Small specialities are encouraged by the establishment in the universities of such chairs as those of "Professor of Diseases of the Chest," and the like. . . . . .

The City Hospital, Boston, exceeds in architectural beauty even St. Thomas's and the Leeds Infirmary, and is furnished with every modern hygienic improvement. Dr. M F. Gavin, a licentiate of our college, and once a pupil of this institution, is surgeon to this hospital. To his kindness I am most deeply indebted.

The Bellevue Hospital, New York, is remarkable for a splendid system of telegraphy and ambulance throughout the city, by which the injured are quickly discovered and conveyed to the wards; also for the holding of coroner's inquests within it, by which grand opportunities for studying forensic medicine are afforded The class last year numbered 436.

The Infirmary on Ward's Island, in connection with the Castle Garden Emigration Commission, is also a noble structure, and in it poor Irish and German emigrants meet with truly paternal care. After all, in Dublin, with ten smaller hospitals, the sick are better convenienced, and the buildings are certainly more wholesome. As several of our hospitals lie close together, an amalgamation of them, as regards clinical instruction, might be readily effected, if the number of cases in one be judged too small for the purpose. . . . . .

With the exception of a few lanes in Boston, I saw no place in the States which did not bear evidence of strict sanitary surveillance. Nearly every town and every city has a grand water supply, sewerage, and an excellent system of inspection, directed by a medical officer. The great fault in his office, like most other positions in the country is, that he is elected by popular vote, and for a very short tenure. The sanitary reports of New York are most splendid—for instance, this one, containing thirty beautiful plates, illustrating the Texas cattle disease. It may not be out of place to mention that, with a view of guarding against the spread of relapsing fever, if it should be imported from Liverpool, our Public Health Committee are about to offer to the poor free baths and washhouses. The distribution of food, the other great preventive, is not within their province; but I feel certain that the charitable will thus aid our poor roomkeepers when the present pressing need for it is made known.

As regards surgical practice, I saw nothing strikingly different from that of Dublin or London. Americans are close readers of works and periodicals in French and German, as well as in English, which, with doubtful honesty, they republish. They adopt, therefore, every well-attested improvement. In treating hip-disease in the advanced stage, Sayre's splint—a brass rod, with perineal and knee-bands for extension—is invariably employed; and, as exercise is then possible, the patient's health less rarely fails than with us. This great surgeon's name reminds me of an extraordinary action for malpraxis to which he was subjected. He was accused of opening the hip-joint while puncturing an abscess in a child. The medical witness who made this assertion had to admit that his sole professional training had been the employment of posting bills in a druggist's book for two years, and that he could not name one ligament of the hip, a question which, he said, related to "minute anatomy." The judge of the supreme court, after advising with a surgical jury, condemned the plaintiff to pay Dr. Sayre's costs and 5 per cent. on the £5,000 damages claimed; and this decision gives us a good hint as to the way the promoters of speculative actions should be treated.

The lunatic asylums are particularly well managed, and show high averages of recovery—that of Halifax having had last year forty-two per cent. of cures on the admissions. I was surprised to learn that no Indian has ever been an inmate, while the negroes show a proportion like that of the whites. In one asylum I was told of the following interesting case:—A young girl, a teacher in a school, was asked by a zealous pupil to teach her algebra. Ashamed to admit her ignorance, she laboured during every spare moment to learn this branch of mathematics, but, after a few weeks became insane. Her case throughout the five years she remained was one of most determined suicidal tendency. Despite every care she contrived to hang herself with bed clothes from her window one night. When discovered she was insensible, and remained so for six days, during which she was nearly perishing from congestion of the lungs. When the insensibility disappeared it was found that she was sane. She soon returned to her duties, and is now one of the most respected ladies in her town.

The credulity in nostrums must be regarded as a proof that civilization is not as advanced as among the better classes in the old countries, and it is now about the level of what it was in the seventeenth century in England. Then such absurdities as Sir Kenelm Digby's sympathetic powder were in vogue. There is this difference, however, that such English quacks were fools—all the Yankee ones are knaves. In 1739 the English Parliament passed an act granting Mrs. Stephens £500 for the secret of her lithontriptic, a mess then found to be made of egg-shells, snail-shells, and some herbs burned together To her certificate are appended the names of several cabinet ministers, and of Cheselden, Hawkins, and Sharpe, the greatest surgeons of the century. Quacks are largely supported by those wretched persons whose diseases have been condemned as incurable. . . . .

I was so pleased with my tour that I would urge my professional brethren to select America instead of the continent for a six weeks' vacation. The glorious and stupendous scenery, the liberality of most of her institutions, and the hospitality of her educated classes, make the United States a truly enjoyable place of travel for the English-speaking tourist; still more warmly I would advise the newly-fledged surgeon to make the transatlantic trip. It is healthful, notwithstanding the sea-sickness. I may mention my belief that the horizontal posture is the only cure for this condition, as the symptoms depend on the shaking of the medulla oblongata. A ship-surgeon has much occasion for the exercise of his benevolence and administrative ability among the emigrants, and occasionally among the cabin passengers, and all branches of his professional knowledge may be called into requisition. To a lover of nature, the towering billows, the spouting and plunging whales, the porpoises running races with the ship, the nautilus, suggester of the sail, and the phosphorescence of the waves by night, are objects of intense interest. During the week's stay in port he can see something of America's finest scenery and enlightened institutions. There is one other topic on which I must touch—namely, the past and present prospects of medical students.

It is this day twenty years since I began the study of medicine; and the changes have been so great that I cannot refrain from some allusion to them. Up to that period success was much more slow of attainment, and for a young man to have gained a high position most unusual; indeed, the instance of Carmichael was the only one to adduce. That illustrious man was chosen President of the Royal College of Surgeons at the age of thirty-four. Then, it wa

THE ROUND TOWER OF ST. MICHAEL LE POLE, DUBLIN.

Theories with regard to the origin of round towers have ever been a *quæstio vexata*, and will remain so till the end of time, in the absence of all information with regard to their builders. Dr. Petrie, followed by a host of writers, maintains they were Christian. That they existed in close proximity to buildings known to have been devoted to the religion of the gospel, is no assumption in favor of their Christian origin. It is stated, with seeming authority, that previous to the introduction of Christianity no mortared or cemented stone buildings existed in Ireland, and that therefore the round towers must be of Christian structure. That they were applied to ecclesiastical uses, and called *cloctheach*, or house of the bell, and used as such for ecclesiastical purposes, is admitted, but no valid reason exists to suppose they were originally built as such, because we find in more than one instance (as at Cormac's Chapel, Cashel, and Swords, near Dublin) the square or bell tower is erected in connection with the church, while the round tower stands at a short distance entirely apart.[*] Without entering into ethnical questions, or contrasting the almost identical similarity of their construction with those now existing in the interior of Hindustan, or quoting Lord Valentia's description, accompanied by an illustration, in his voyages and travels (vol. i. page 85), we will briefly state our own opinion. First, with regard to their proximity to ecclesiastical buildings, every one who has given themselves the trouble of being acquainted with the difficulties of missionary labour from the earliest ages to the present will understand with what tenacity the newly-made convert clings to the superstitious relics of his long-cherished faith, and that the vicinage of these towers, associated as we suppose them to be with his religious belief, was considered, for two reasons, the most suitable sites for Christian worship; first, because they were already invested in the minds of a primitive people with a sacredness of character inseparable from, and akin to, religious veneration, and therefore the more likely to attract converts, and second to prove that Christianity had triumphed in completely overthrowing the idolatrous worship of the native Irish. Indeed, we find Pope Gregory the Great, in his instructions to the missionary Augustin (Ap. Bed. Eccl. Hist., li. cap. 30), directs that the temples of the Anglo-Saxons shall not be destroyed, but to purify them, and overturn the idols, and then consecrate them to the worship of the true God, so that the people would be induced by the circumstance of their being accustomed to resort for worship to these places might continue to do so, and there acquire the knowledge of God and adore Him. Is it not probable a similar principle may have actuated the first missionaries in Ireland? and although they could not convert the round towers into churches, it would predispose them to erect temples of their faith in close proximity to the scenes long consecrated to an idolatrous worship.[†] With regard to the second argument, that mortared or cemented stone buildings were unknown previous to the introduction of Christianity, we will simply dispose of it by stating we have no evidence to the contrary. The early churches were all built of wood, but that is no reason for supposing that stone buildings were unknown. The formation of the round tower sufficiently accounts for its long outlasting all cotemporaneous structures, and a learned modern writer allows that the Hag's Castle on Lough Mask was erected prior to Christianity, while all are agreed that no Christian emblem has ever been discovered, either incised or as a sculptured ornament, in connection with a round tower in Ireland, except those known to have been introduced at a not very remote period.[‡] Would it not be reasonable to suppose that if these towers were erected in connection with the divine teachings of Christianity, that their builders should endeavour to perpetuate its truths by incising over their doorways or in other conspicuous position some representation of the hallowed emblem of their faith?

That a large intercourse existed at a very remote period between Ireland and the East, and that these eastern nations worshipped the sun and fire, according to the religion of Zoroaster, is allowed; and that colonies of these people came to Ireland from some far distant parts of the East, is also admitted; that there are no round towers to be found in any part of Continental Europe, is well known; that two of them exist in Scotland—one at Abernethy, the other at Brechin,—and Scotland being colonized from Ireland, are all strong arguments in favour of their being pre-Christian. Against this, the one at Brechin has, over one of the two arches of its western front (if we may call any portion of a circular building its front) a figure of our Saviour on the Cross, and between both arches two small statues of the Virgin Mary and St. John (*vide* Ledwich, pp. 294 and 297, and Gough's observations on the round tower of Brechin, Archæologia, vol. ii.), but it is well known that these figures were added long after the original building, and when it had been applied to Christian uses.

Whatever may have been the objects for which these towers were originally erected must ever remain matter for conjecture. We have no doubt but that they existed long previous to the preaching of Christianity in this island; but we have to regret that several of these interesting links with passed ages have disappeared in the lapse of time. Amongst the rest, one, the memory of which has been rescued from oblivion in the pages of the "Journal of the Royal Historical and Archæological Association of Ireland," by Sir William Wilde, in his Memoirs of Beranger, in which he gives many interesting particulars, accompanied by an illustration[*] from the pencil of that artist, and engraved by Hanlon from the original drawing.

It will be seen by reference to Speed's map of Dublin, 1610, that the church of St. Michael le Pole stood at the rere of the present line of Ship-street, midway between Bride-street and Crosse-street, now Golden-lane. The line of Ship-street has been somewhat changed since that period, it is now a rectangle called Great and Little Ship streets, it then formed an approach to an extern quadrant in one line, and was called Sheepe-street.[†] The addenda of le Pole to the name of St. Michael appears to have been derived by its vicinage to the Poddle river and the Pole or Pool Gate. The church is supposed to have been erected (but upon no good authority) by Sitricus the Dane; the round tower was close to it in the adjoining graveyard.

St. Michael le Pole's Church was demolished in 1706, after remaining for a long time in ruinous condition; and on its site was erected a school-house,[‡] which exists at present, and is now the alms-house of St. Bride's parish. The graveyard still remains in much the same condition as when the school-house was built, as will be seen by reference to the illustration given by Sir William Wilde, as above mentioned.

The existence of the tower appears to have been little known to the inhabitants of Dublin, as noted by both Twiss and Luckome in their respective tours in Ireland, 1775 and 1779. With reference to the demolition of the church, we find the following in Mason's St. Patrick's, p. 221:—"On the 18th of May, 1706, the dean and chapter confirmed the grant made by the ministers and wardens of St. Bride's parish, whereby the Church of St. Michael of Pole was conferred upon John Jones, D.D., for the purpose of erecting a school there. This ancient church, which is situated near Sheepe-street, had a round tower adjoining; to preserve this interesting building the chapter shewed an anxiety which every antiquarian will think laudable."

We observe in the minutes of the chapter, 22nd August, an order "that Mr. Jones do not pull down the monument or tower of St. Michael of Paul's near his school-house." At pages 72 and 234 in Mason's St. Patrick's we find other notesreferring to this matter. But the round tower had outlived its palmiest day in that lone graveyard, once circled by grassy pastures, but now encompassed with teeming life, and hidden away for generations by high-pitched gables from incurious gaze; its shadows had long since ceased to be cast upon the tombs of the neophite, the Dane and the Saxon, because they had crumbled away and became one with the remains of the dust of their occupants; but there it stood, a silent witness, recording our earliest periods, although its own history had been lost for ever in the lapse of time. For a long time in tottering condition, it was finally, in 1778, doomed to be of the past; this we find from the following extracts from the *Freeman's Journal* of dates 8th August, 1778, and 15th August, 1778, respectively, and for which, and much of the information we have above given, we express our best thanks to our dear and much valued friend, Dr. Thos. Willis, sen.; and, further, we must acknowledge that the pages of this journal have frequently been largely indebted for information derived in reference to the ancient topography of Dublin to the same source; to him it has ever been a labour of love to assist us by his invaluable researches, and aid us by placing at our disposal all the treasures of his large collection of books and MSS. in relation to ancient and modern Ireland:—

"*To the Committee for conducting the Free Press.*

"A CARD.

"An old inhabitant of St. Bride's desires to be informed by the rector[*] of that parish for what reason, or to answer what purpose, the steeple of the old church (St. Michael of Poel's) in Great Ship-street has been lately thrown down? He hopes that the worthy rector will not take it amiss that this inquiry is made; the writer of this card wishes to be informed how the money received for the stones of the steeple has been applied or disposed of? and if not disposed of, why the same has not been done? He also thinks it a little strange to find the master of a Latin school suffered to occupy this church, without paying any rent, whereas if set at an improved rent, the profit would considerably increase the fund for relief of old and necessitous housekeepers in that parish. He flatters himself the parishioners will take this matter into consideration at their next vestry."—*Freeman's Journal*, 8th August, 1778.

"*To the Committee for conducting the Free Press.*

"A CARD.

"The old parishioner of St. Bride's, in your paper of the 8th inst., by a card, wishes to be informed of the reason for taking down a small round tower antiently standing in the churchyard of St. Michael's in Ship-street. The answer is, that there was an absolute necessity for doing so, as it threatened ruin not only to the school-house, but the neighbouring houses of Chancery-lane, for it had received such a shock by a storm in November, 1775, as to loose

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[*] Several instances of this occur.

[†] *Vide* opinions of Dr. Lanigan, in note 146 p. 413 Eccl. Hist. Ireland, vol. iv.

[‡] The towers of Antrim and Donoughmore, Co. Meath. have slabs affixed over their doorways, with rude sculptured effigies of the Crucifixion.

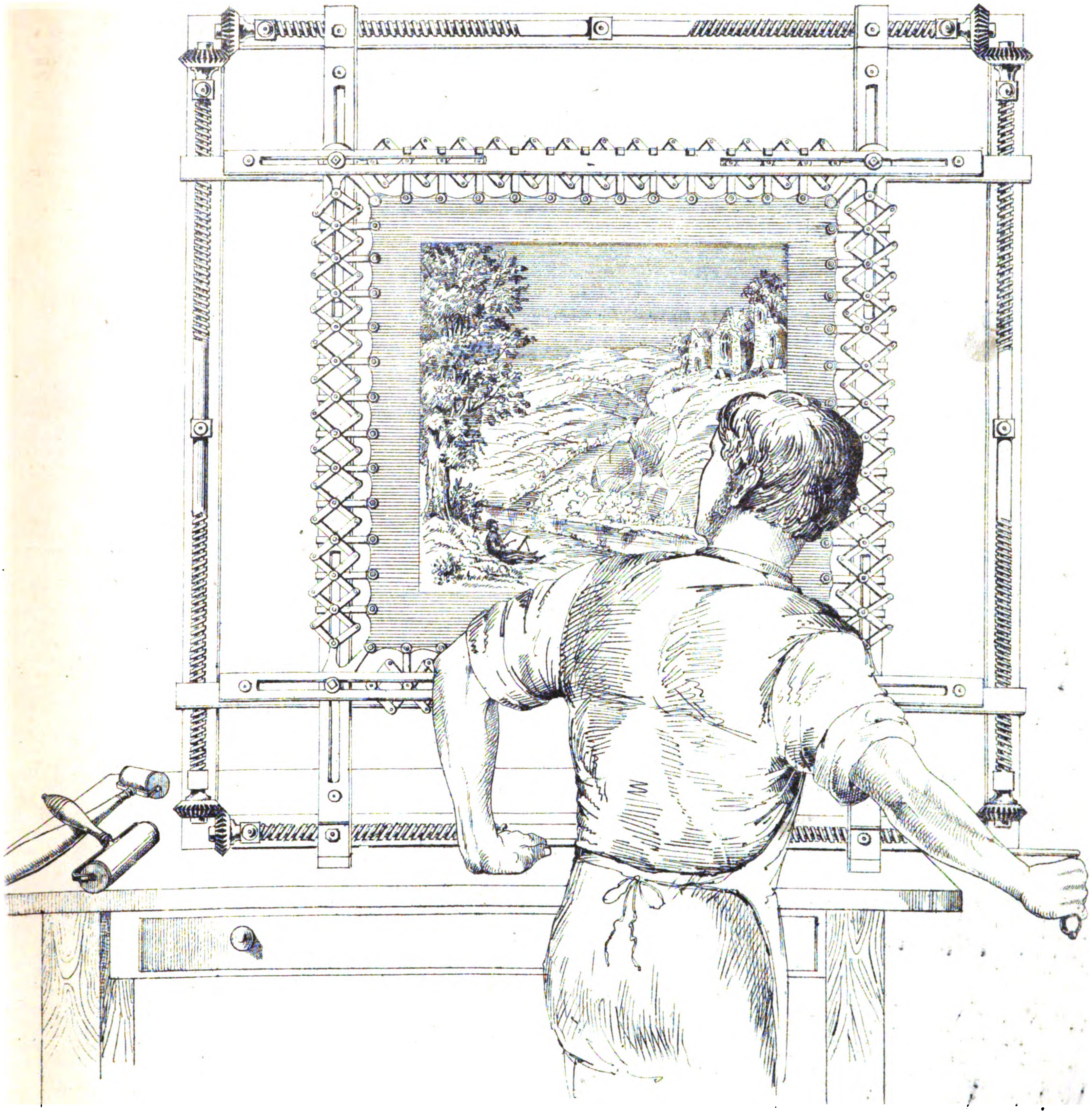
[*] We have in our possession a tracing bearing the signature "R. Travers," being the learned Dr. Travers so well known in literary circles, who presented it several years ago to our friend Dr. Willis, from whom we obtained it. It is from a drawing of the round tower, evidently by Beranger, its date being given 1766. It is the same view as that shown in the illustration given in Sir W. Wilde's memoirs, but with the addition of a portion of the rere of the houses in Chancery-lane Measured by scale it is exactly double in size, and we should have given a lithograph of it but that it would have appeared like plagiarism of Mr. Hanlon's admirably-executed woodcut.

[†] In the Autograph of the Four Masters, in the library of the Royal Irish Academy, we find the following:—"1489. The street of the sheep in Dublin was burned by the Lord Chief Justice." In Speed's map of Dublin it is called Sheepe-street, as mentioned above. Ship-street is evidently a corruption, and not derived from its contiguity to the river Liffey, and the Poddle river forming a tidal harbour thereon, as some have supposed. That an estuary existed, extending to the rere of Dame-street, is unquestionable; but that the Poddle river higher up was ever navigable for more than small boats, we will not allow.

[‡] In connexion with the Cathedral Church of St Patrick there formerly existed a free school of the diocese, which was of very early foundation, and for some time endowed with annual pension from the dean and chapter, also from the archbishop. This school was removed in the early part of the seventeenth century to the Church of St Michael le Pole, which was granted by the chapter to Dr FFloyd, or LLoyd; for that purpose it was, we presume, held within the walls of the church, and known as the diocesan school; it appears to have been the original of Dr. Jones' School, rebuilt from the ruins of the church. This Dr. Jones is the same who was deprived of his university degree by an order, 19th July 1688, for writing a tripod or satirical oration attributed to Swift.—*Vide* Mason's "St Patrick's," pp. 10 and 233.

[*] Rev. John Lyon, D.D., was rector of Bride's in 1778.

The Irish Builder No. 262. 15. Novr. 1870.



LEWIS'S PATENT AUTOMATON PENTAGRAPH

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some of the stones, which fell out, and was so much bulged in the middle that the fall of it was every day expected. The matter was laid before the dean and chapter of St. Patrick's as patrons of this parish, formerly united to St. Bride's, for their aid to support it, who referred the examination of this old edifice to one of the most skilful architects in this kingdom. He reported the evil complained of to be incurable, and that the tower could not be raised, for the attempt of fixing a scaffold about it would tumble it down. It is well known that the ruin of it was prevented, about forty years ago, by a lover of antiquities, who then applied to Dr. Swift and other gentlemen for contributions, when it was scaffolded from the ground and well pinned with lime and stone within and without, which thorough repairing hath ever since preserved it from falling. But in 1775, when it was found to be dangerous to let this old pile of stones stand any longer, it was concluded to pull down the upper part of it, which was done accordingly, to the level of the school house roof, and all the damage done to the said roof and chimney were repaired; the expense of all which work amounted to £19 5s. 9d., of which sum not one shilling was a charge upon the parish. The stones have been since applied to rebuilding a ruinous wall on the north and east side of the churchyard and some part of the engine-house. The smallest stones and rubbish still remain to be applied to the levelling of the pavement of the street when wanted. The stones used in the walls made only forty-two perch of work, which, valued at 4s. a perch, are only worth £8 8s. - a sum far short of the first expense.

"The old parishioner wonders that the master of a Latin school should occupy the church (as he calls the building) without paying rent for it.

"He might have heard from the older parishioners that this edifice was not raised for a church, nor for any other purpose than that of a Latin school. The ruins of the old church of St. Michael of the Pool remained in the beginning of Queen Anne's reign. In 1706 Dr. Jones, an eminent Latin master in Ship st., applied to the patrons of the parish and the incumbent for leave to rebuild the old walls and convert the same into a school-house, which work, upon obtaining their consent, he set about and built a large and lofty school-room, with three small rooms at the end and a flight of stairs in the tower leading to the two upper rooms. The whole work was finished at his own expense, except the windows, which were given by Mr. Evans, his usher, who succeeded as master in the school at his death, after whose promotion to a country living it lay waste for a few years, until it was put in order for the ingenious Dr. Dunkin in 1738, who was succeeded by his usher, Mr. Ball, the present very worthy master, from whom, or any of his predecessors, no rent was ever demanded by any incumbent."—*Freeman's Journal*, 15th August, 1778.

Thus has passed away by far the most interesting record in connection with the history of ancient Dublin; its ashlars—hammered most probably[*] before Christianity was known in Ireland, but certainly at a period so remote as to entitle them to be preserved as relics for generations yet unborn—have been, as we have shewn, applied in the most ignoble manner to the rebuilding of a ruinous old graveyard wall; its hearting (to use our own professional term), *i.e.*, the smaller stones, were reserved for levelling the pavement of the street—to be ground down into rubbish. "*Sic transit gloria mundi!*" Thus we conclude, and with an earnest wish that the efforts of the Royal Historical and Archæological Association of Ireland may be ably seconded in their praiseworthy exertions to rescue the round towers of Ireland and other interesting records of our past history from further decay and demolition.

[The MS. notes and drawing from which this paper is compiled have been in possession of the writer, our contributor, Mr. William Hughes, for some years, and were intended by him for the IRISH BUILDER more than twelve months since, but it was thought advisable, in consequence of the publication of Sir W. Wilde's highly interesting memoirs of Beranger appearing in the Journal of the Royal Historical and Archæological Association of Ireland, to postpone it till the present.—ED. I. B.]

DRAINAGE OF LOUGH ERNE.

MR. Roberts, C.E., Government Commissioner, who investigated the merits and details of the Lough Erne Flood Drainage project, at some public meetings in Enniskillen a few months since, has sent in his report. He approves of the plan submitted by Mr. Lynam as sufficient for all it aims at, but he has increased the probable expenditure from £70,000 to £90,000. He makes an addition to Mr. Lynam's estimate of £5,000 for dredging plant, and £5,000 for interest on borrowed money; and increases the amount per yard dredging some shoals. A valuation of the lands has to be made in detail before a complete report can be furnished.

SMALL FARM MANAGEMENT.

A HANDY Book of Small Farm Management, by Mr. Thomas Baldwin, Superintendent of the Agricultural Department of National Education, has appeared, and it deserves some notice at our hands: first, for the admirable manner in which it treats of manures, farm implements, crops, live stock, permanent improvement of land, and the exquisitely satisfactory manner in which the details and management of a five and a-half acre farm are given. There are many useful hints on small farm buildings (in chap. xxxiii.) specially suited to the small farmer and farm labourer, who, in many parts of Ireland, for the want of the knowledge of these hints to stimulate them, inhabit miserable hovels in company with pigs and other inferior animals, without out-offices, and without health, happiness, or comfort. Farmers find often that to erect a cottage for a poor man costs a large sum, and when up is a source of new taxation upon him; so that, though the gentry and the Government offer to lend money on interest for the purpose, it cannot be accepted nor applied. Mr. Baldwin gives plans comparatively inexpensive. The Board of Works do not lend money for dwellings or offices unless the rent of the holding be at least £50 per annum, and house and offices to suit such a farm would cost about £500, including interest—a sum, of course, which farmers cannot pay; and Mr. Baldwin shows that about 500,000 holdings in Ireland are not rented at £50 per annum, and consequently to those 500,000 no money can be lent by the Board of Works; and to these 500,000 holdings Mr. Baldwin's plans apply. He says (p. 198):—"In the dwelling of the poorest family there ought to be a good, clean, and comfortable kitchen, which could be used as a living-room, and at least two bed-rooms, the kitchen fire so placed as to heat both. For a grown up family of boys and girls there should be three bed-rooms and a sitting-room in every farmer's house, and a porch outside the entrance door. We know a very comfortable cottage of this kind built of mud walls, with strong upright posts of larch trees, chimney of stone and mortar, thick coat of thatch, and with boarded floor, put up at an outlay for timber, mortar, thatch, and a kitchen grate, of £6 6s. 6d. We do not advocate mud walls or straw for thatch for those able to pay, but regard must be had to the circumstances of the people." Mr. Baldwin's description of the various offices for use of the humblest labourer to the snug or rich farmer are well and minutely described. He says (p. 203):—"The position of the several farm offices, as regards their respective uses and their relations to the whole plan, is a matter of great importance,—placing them so as to economise labour as much as possible." The various details given on these heads are capitally put, and useful in the extreme to the small farmers of Ireland, for whom chiefly the book has been written, teaching how to utilize and economise, having a place for everything and everything in its proper place. There are many things which, of course, we could suggest, but Mr. Baldwin has written well on the confined space to which he had to limit himself. The book is extensively illustrated with well-executed wood-cuts, neatly bound in cloth, contains 215 pages of well-written and precious matter, yet sold for the small sum of 1s. 6d. We wish it every success, and landowners would serve themselves and their tenantry were they to present as many copies as they could. It is produced by the firm of Brown and Nolan, Nassau-street.

PORTRAITS OF ILLUSTRIOUS IRISHMEN.

FEW people perhaps in Ireland are aware that a great exhibition is to be held in London next year. Comparatively little notice has been given or taken of the fact, but the preparations are proceeding, and the collection of works of various kinds is expected to transcend in magnificence even the great world's fairs of 1851 and 1862. This is a matter of interest to the whole empire. It is not, however, the only exhibition which is to signalise next year. There is another in contemplation which more nearly concerns our readers. It is to be held in Dublin, and to be of a character which we confidently anticipate will excite the deepest interest. The intention is to have a collection of Irish portraits, including the celebrities of every age whose works illumine the pages of history. Such a gallery would be at once brilliant and instructive. It would illustrate the remarkable events of by-gone times, and impress the lessons of noble lives upon the present generation. Here in the glory of the past the true lover of his country would see the light of many a great example to guide and cheer him in the path of duty. Who would not feel a thrill of pleasure and of pride in being face to face with the worthies of old, whose virtues and whose genius have linked the name of Ireland with the highest moral and intellectual triumphs? Happily she has been a prolific parent of illustrious sons, whose portraits are worthy to be grouped in the national collection. We cannot imagine a more interesting spectacle than the gallery will present, in which statesmen and soldiers, philosophers and divines, orators and poets, authors and artists will stand in glorious array, and, as it were, speak from the canvas to their countrymen. What a roll of honour will be the catalogue of an exhibition graced with the names of Burke, and Grattan, and Plunket, and O'Connell—of Ussher, and Berkeley, and Swift, and Boyle—of Sarsfield, and Wellington, and Gough, and Lawrence—of Sheridan, and Goldsmith, and Moore—of Maclise, and Hogan, and Balfe, and others too many to enumerate, alike eminent and honoured for their talents and their virtues! We need not add that to the lover of the fine arts and the student of Irish history such an exhibition would offer an inexhaustible source of enjoyment. How is such a collection to be compiled? This question, we believe, will be easily answered. In the halls of our nobility and gentry and the houses of private citizens will be found abundant materials, and we are sure that when the subject is proposed they will join with alacrity in furthering the design. It may be remembered that a few years ago an exhibition of a similar kind was organised at South Kensington, at the suggestion of the late Earl of Derby, and proved to be of great interest and value. The Commissioners of Science and Art lent their powerful aid in collecting portraits from various parts of the empire, the expenses being paid by the department. A similar favour can hardly be denied to Ireland, even by Mr. Lowe. The proposal to hold such an exhibition has been very favourably entertained by several noblemen and gentlemen, to whom it has been mentioned, and the Lord Lieutenant, it is also understood, will use his influence to promote its success. The time suggested for holding it is the month of April, and the place the Exhibition Palace.—*Express.*

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[*] From Beranger's drawing the round tower appears to have been much less in height than those now existing in the neighbourhood of Dublin, he describes it thus (as given by Sir W. Wilde)—"Its walls were not in perpendicular line, but so ill constructed as if the builders had been ignorant of the use of the plumb line." This may be explained in two ways,—it was either one of the most ancient, or built at a later period in imitation of those already existing at a time when the science of masonry had somewhat declined; at the same time, we have no disposition to compromise its antiquity or origin by eclectic reasoning: on the contrary, we believe with Beranger it was one of the most ancient in Ireland.

HOUSING OF THE FARM LABOURER.

In the course of an excellent and exhaustive paper read by Mr. C. W. Hamilton, at the monthly meeting of the Athy Farmers' Club, we find the following laid down as amongst the important *desiderata* for improving the condition of the Irish farm labourer :—

"The proportion of cottages that would in England supply the necessary number of labourers may, I think, be estimated at one to every thirty Irish acres; a much less number would probably suffice in Ireland, where so much of the farm is usually, and certainly ought to be, kept in permanent grass; but until we have at least one comfortable cottage to every forty or fifty acres of mixed husbandry, I do not see any prospect of permanent improvement in the country.

The next question is—How the labourer is to be placed in a proper cottage? I do not think that with my experience in Leinster a suitable double cottage with the small offices, such as a pigstye, &c., can be built under from £140 to £200. A single cottage, &c., costs rather more than half of this sum—say from £80 to £120. So that supposing the money to be borrowed from the Board of Works (as even if expended out of the landlord's or tenant's capital, the estimated return ought to be similar), the sum to be paid annually to recoup the outlay should be from £5 to £6. Now it is quite clear to me that this sum should come out of the pockets of the three parties most interested—the landlord, tenant, and labourer, in certain proportions. The landlord is interested, because the value of the estate rises with the well-being of all its inhabitants. The tenant farmer is more interested, because the supply of his labour both in quantity and quality depends on the same condition: the labourer, of course, is the one most interested of all. Some have advocated the building of cottages by the landlord, and letting them directly to the labourer. I do not think this would do. The labourer must be dependent on his employer, or all motive for working diligently and taking care of his master's interests would be taken away; but I think the landlord ought to be entitled to see that the written agreements binding the labourer to the tenant farmer's service are fair and reasonable, and strictly adhered to. All contracts should be in writing, and in duplicate, which would prevent much petty litigation.

When the labourer is in his cottage, care should be taken that he has within his reach food at a reasonable rate of purchase. In many cases his necessities oblige him to make ruinous bargains for the supply of meal, &c., on long credits. The Scotch and English labourers referred to get their food at first cost, and the employer does not lose by it.

I estimate as perhaps the point of greatest importance a good supply of milk. I do not advocate the labourer keeping a cow—I think it makes him too much of a small farmer; but I think he cannot be comfortable without a fair supply of milk. Dr. Smith, in his dietary, estimates skim milk at ½d. per pint, as the cheapest animal food; but I think it might be sold at much less, with profit to the farmer. The same amount of butter is yielded by churning the whole milk, or cream from milk once skimmed; and I doubt whether skim milk sold at ½d. per pint, would not yield as good a return as the same amount of buttermilk given to pigs, but this is one of the subjects worthy of your discussion.

I have thus tried to suggest some of the most prominent subjects which affect the future of our agricultural labourers. I would urge you to consider how intimately their interests are bound up with your own, and how necessary it is that you should satisfy yourselves that they have the same advantages as to comfort with you, that they can obtain elsewhere; and when you have done so, you will be in a position to say to him: "If you do not make my interests yours, and learn to work skilfully and honestly, I must only arrange either to seek others more willing, or to cultivate my farm without you, even though my profits should be less."

The reading of Mr. Hamilton's paper was received with applause by the Club. From the animated discussion which followed, we are convinced that a majority of the members have given the subject an amount of thought that its importance demanded at their hands. We make room for portions of it :—

Mr. O'Neill—It seems to me that on most (if not all) estates cottages have been built, and are building, which are too good and too expensive for the purpose. If landlords and tenant farmers combine to make a little better cottage than the old mud walls, give a good floor, and a good roof that won't let in water; and in that way a good, plain house could be built for much less than Mr. Hamilton says. Good cottages are necessary to the improvement of the condition of the labourer, but if a double cottage costs £120 it will deter many from building. A medium house ought to be built for a less sum than that.

Mr. Todd—That is a great mistake, Mr. O'Neill—running down the mud walls. When they have a good stone foundation, and a well-thatched roof, you have a very good house. There is not near the same consumption of fuel, because the house is always warm in winter.

Mr. Doran—I can bear out the truth of that fact. Fifty years ago there was a house built at my place, and the walls—mud ones—are as sound as a bell this minute, and the house is as comfortable as any house can be. Mud is too much cried down, for, believe me, there is no more comfortable house than a good thatched mud cottage.

Mr. O'Neill—One bad effect is that the straw is liable to get loose; but those houses having thatched roofs are warmer in winter and cooler in summer. An equal temperature is kept up, which is more conducive to health.

Mr. Doran—Your proposition, Mr. Hamilton, is just this, that on every farm of fifty acres there should be a labourer's cottage?—Yes.

Mr. Davidson said, with regard to the walls of labourers' cottages, they might depend on it that the materials most convenient in each district, no matter whether these were brick or mud, would be most in use for that purpose. In Armagh he knew a great many labourers' cottages to be built of mud, the walls rough cast outside, but they were slated properly. With regard to roofing, he thought people would soon begin to think that they had a better use for straw than putting it as thatch on cottages. He hoped that slates would altogether replace thatch on every dwelling in the country. The poor man's thatch ran away with a good deal of straw. I am inclined to agree with Mr. O'Neill that a good labourer's cottage might be built much cheaper than Mr. Hamilton mentions. I think a very comfortable one could be built for £50 or £60.

Mr. Hamilton—I will merely reply to my friend Mr. Doran's observations, and what has been just now said. I also know a great number of instances where mud cabins have made good comfortable houses. My own lodge has mud walls, and it is built over one hundred years. It is covered with thatch, but some day or other I intend to slate it, for it involves an immense expense to keep up thatch. I don't object to mud walls, but I very much object to the use of thatch. As to the expense of building a house for a labourer, I quite agree that if you can build a good comfortable house by cutting off £10, £20, £30, or £40 from the figures I have laid down—and I find they are pretty nearly as low as I could cut them—you will be doing a great service. I have built for my employers some 150 houses, and I found I could not go below those figures. Great efforts have been made by the Royal Agricultural Society in giving prizes for essays on the building of cottages, in order to put into all our hands the materials for reducing expense. They met with great difficulty in doing so, and I think the Board of Works has not yet been able to sanction a prize for any cottage below my own figures. Therefore, in the consideration of how cheap you can make them, you must first start with, what do you want? Will you be satisfied with less than a kitchen, three bedrooms, a little dairy, and everything necessary for a family? If you are not satisfied with that, what is the limit you will allow? Take 12 ft. by 14 ft. for the principal room. Details must be given as to the purchase of work, plastering, securing a good foundation, a good floor, and all the necessary essentials to a comfortable house.

Mr. Doran—How many rooms have you allowed in your estimate?

Mr Hamilton—A kitchen, two rooms below, and three above.

Rev. Mr. Bagot—It is a qualification with the Board of Works that there must be three bedrooms.

Mr. Hamilton—I have never built a good double cottage under £140.

Mr. Robertson—I think the demoralization of the labourer is pretty generally admitted, but the point is, how can they be improved? It is generally considered by all parties who have considered the subject, that can be done only in this way—give him a good house first, and a good education second; and I would put third the suppression of Sunday liquor traffic. The education of the country is deficient, and how it could be otherwise I can't conceive, when the teachers are men who have to live on £30 or £40 or £50 a year. Why, the labourer can hardly support himself on that wage. To improve the labourer you must educate him better, and to educate him better you must pay the schoolmaster, and so have a class of men fit to become teachers.

Rev. Mr. Bagot—With regard to the price of a cottage, I may just mention that I was one of the committee on Lord Abercorn's prize. The limit for one cottage is £70, and for a double cottage £120. There were over forty competitors, and the prize went to a labourer's cottage built by Mr. Trench at Geashill, in the King's County. We took the average cost of materials all over Ireland into consideration.

Mr. Low—If the landlords and tenants can be made to see that it is for their common interest to take proper care of the labourer, they would rather trust to themselves than to an Act of Parliament. Cottages, in my opinion, should be entirely under the command of the tenant, and so he could have command over the labourer.

Mr. Anderson—One suggestion I would like to make. With regard to these cottages, they are much wanted, but these are large sums, £100 to £120, and would frighten landlords and tenants to speak of them. If the landlord and tenant would come to such an arrangement as this—the tenant to drive all the materials, and the landlord to provide them and give the tradesmen's wages. It would not in this way appear so heavy to either of them, and the tenant should not be then charged interest for the expense of building the cottage. He did his part, and he should agree to leave it at the end of his lease in good order. By the landlord doing his part in the shape of money, and the tenant in the driving of the materials and the rough work, a good cottage might be got up without leaning so heavily on either. By the tenant having to draw the materials he is not likely to exceed the proper bounds, and it will be the means of keeping him in check, and consequently the landlord will be able to arrange with him more readily.

Mr. Robertson—What Mr. Low stated is the point. I think the cottages should be under the control of the tenant. Without some control over the labourer you are not at all certain of having the labourer at all times when you require him. By having a comfortable cottage on the farm, as part of the accommodation, the labourer would begin to have an interest in serving his employer. I would have coupled with that yearly or half-yearly engagements.

Mr. Low—With regard to cottages, it was a matter he had considered a great deal about, and he was long ago convinced that he could not get them cheap and good. If they could make a good double house, with 2 bedrooms overhead, with a kitchen and second room below, for £120, it was very fair. He was really so badly off for labourers, he had tried to run up one very cheaply. It was small enough, no doubt, and it might be made a great deal better if £10 more were expended on it. He would not advocate it as a cottage for people to take pattern by, but it was more comfortable than what a labourer had to live in at Athy. They won't waste time in the morning going to work, if they have cottages on the farm where they work, nor would they waste time and money by coming into Athy at night. He was trying to get this house finished for £35, and if it was not good enough, £10 additional would make it very comfortable. He thought a double cottage ought to be built for about £80, and if the landlords and tenants would now combine they would soon be able to have a comfortable, contented class of labourers in the country.

Mr. Webber—My lord, I have been the means of building cottages, about forty in number, in the neighbourhood of Athy, and my experience agrees with what Mr. Low has stated. We want to improve the condition of the labourer, but we should take care, in our anxiety, not to make him worse off. There are a great many farmers wishing to have labourers' cottages, but if the farmers would know how much a labourer's cottage is worth to him per week, the landlord would know what money he would have to spend with a certainty of a safe return, and if we come to any resolution upon this question, regard ought to be had to that.

Mr. Robertson—If we come to any resolution, it ought to be more comprehensive than that. It must be as to the best means by which a labourer can be most certainly elevated in his condition. In that case you must take into consideration his education. I am afraid I was misunderstood in my estimate of a cottage. What I meant was, that a double cottage ought be built for £80 or £100.

Mr. Webber—I believe you can't build a good cottage for less than £120.

Mr. Hamilton—There is one thing I wish to make an observation upon, as to engagements for six months or for a year. We must take it where this rule in England or Scotland applies that the engagement does not end with the period stated in the agreement. No, upon these estates the engagement goes on, and the labourer does not change. On the very estate I have referred to the fathers and grandfathers of the labourers have been there before them, and I know of instances where labourers are forty years in the work. That is not like going to a market-place; and when the term of engagement expires, if the man is a good man, and pleases his master, he makes a new engagement, and remains where he is.

Mr. Hamilton—I think you ought not to resolve upon any particular sum for the expense of building a cottage, for when the Agricultural Society think it impossible to make a comfortable cottage for £50, we might just as well, perhaps, leave it over for the earnest endeavour of some one to make it less than my figure.

The following resolution was passed unanimously:—

'Resolved—That in the opinion of the Athy Farmers' Club the labourer should be comfortably housed on the farm: that his cottage should have a garden attached, and should be under the farmer's control."

The further discussion of other questions pertaining to the farm labourer was postponed until next monthly meeting.

THE CHURCHES OF GLASGOW.

The churches of Glasgow are well worth studying by an architect who has occasion to build what we would call chapels or preaching halls, the solution of the problems involved in fitting both Gothic and Classic forms to this purpose having been attempted by the Glasgow architects with considerable success and variety of result; though, for the practical end of bringing a thousand or fifteen hundred people within easy reach of the preacher's voice, the old square box with wide galleries still remains the best. Probably no city has built more churches in the last half-century. This arises from various causes—from the increase of the population necessitating additional church accommodation, from substituting for old buildings, in what has become the business part of the town, new churches in the west end, but chiefly from the establishment of the Free Church, which of itself almost doubled the number. Everyone is interested in ecclesiastical affairs, and there is a strong rivalry among the different congregations as to who shall build the handsomest church, which the wealth of the city has in many instances enabled them to gratify, spires blossoming up at the corner of every second street. Most of these are of the old box form, with perhaps a portico in front, or with Gothic windows and a spire, more or less (generally less) successfully stuck on to it. Some, however, show originality of arrangement. Free St. George's is a cross church, with short arms, in one of which is the pulpit, in each of the others a gallery. The angles are filled up by aisles used as passages, from which the pews are entered, each by its own door in the wall. It is Classic in style, with a dome over the crossing. The interior (in plaster-work) has considerable dignity, and is capable of containing about a thousand people without any interrupting pillars. The acoustics are, I believe, not remarkably successful. Outside the dome is slated, the mean look of the material being aggravated by the form, which is flat as a saucer. Messrs. Boucher and Cousland were the architects. On the hill overlooking the park is another large Classic church attached to an institution for teaching divinity, designed by the late Mr. Charles Wilson. A church and college on a hill-top, with three great towers, seen for miles round, was a splendid chance for an architect, which here, unfortunately, has been missed. The principal front, facing north-east, is flat, precisely what it should not be with that exposure. There is a dreary lobby inside, the class-rooms are large and gaunt, the general aspect dismal. Downing, in Cambridge, is cheerfulness itself compared with it. The church is the usual square box, with attached portico, flanked by two slender square towers, which, though Classic in detail, look like bad Gothic at a distance. The interior is really fine. The ceiling is a semicircular arch, springing from Corinthian pillars, placed about 8 ft. from the side wall, supporting, by means of lintels stretching to the side walls, a cross vault over the windows. The galleries are inside these, so they do not obstruct the view, and the area of the church, again, is kept inside the line of the galleries, the space under which forms wide passages. It is all in plaster, of course, but tastefully, if a little too gaily, coloured. The grand error of this group of buildings is, that the south front, which, though to a back street, is from its elevated site conspicuous not only from the great thoroughfares below it, but over miles of country, is built in the shabbiest, ugliest manner. The great tower, a translation into Classic of those overhanging the squares of Sienna and Florence, though not faultless, is fine; the little inner tower above its projecting corbels is solid, and looks something like a tomb. Perhaps it is. It would be a grand notion for the founder, say, to repose there. Opposite this church is one built for the great preacher, Dr. Caird—an ordinary Decorated Gothic church with nave and aisles, very fair in detail; no galleries; a chancel, about 6 ft. deep, in which the pulpit is placed; and a square tower with buttresses and pinnacles at the angle. It is much better than the run of Norconformist chapels in England, but seems too short for its height to one accustomed to the usual proportion of churches. Mr. Rochead was the architect. On the Great Western-road is a church overhanging the Kelvin, belonging to a body generally called U.P.'s—short for United Presbyterians—in which an attempt is made to adapt Gothic forms to the worship. The aisles, very narrow, are used as passages, and are completely shut off by a wooden screen, through which a tall narrow door gives access to each pew in the nave. There is no nave arcade; concealed iron beams carry the clerestory, at the bottom of which is a narrow gallery, deeper ones being placed at the end of the church and in the transept. There are consequently no pillars between the minister and the congregation, but the church is bad in aoustices, and not very happy in its proportions, short and dumpy, while the spire looks as thin as a fishing-rod. There is a wonderful piece of vaulting in a porch, the stones filling in between the ribs being laid on their ends instead of horizontally, which one was not surprised at being told was very hard to construct. Each stone had of course to be curved to fit the ribs. The details are nearly right, but just miss it. It is much admired I was told. The architect is Mr. Honeyman. Farther out on the same road is another clerestory church, with a spire square on plan and good in outline from some points; but though the entasis is well drawn, a square spire always looks wrong in some view. It has a good Italian-looking porch with a barrel vault. The entrance is through an apse which is scarcely defensible, even if the object was, by avoiding a straight wall opposite the speaker, to assist the acoustics, which, I was assured, were excellent. Inside it has a great appearance of height, but the exterior looks too short. The nave arcade, of plain stone arches, is carried on iron pillars, which support also at mid-height galleries in the aisles, which, to an eye accustomed to stone ones, look too thin. The details are simple and correct, but perhaps a little hard and severe. The architects were Messrs. Douglas and Stevenson. One might go on through several numbers describing churches, but before passing to the greatest building Glasgow has built for centuries—the new University, we must mention three which are richly painted in their interiors by Mr. D. Cottier. One built and endowed by the Messrs. Baird, the great ironmasters, by the same architects as last mentioned, has rather a grand spire, French in character; its form, similar to the last, giving considerable wall-space for the decorations which cover every part, and are good in colour and correct in style, if perhaps rather strongly pronounced in form. The painting harmonises well, however, with a very fine figure stained glass window by Messrs. Morris and Co., of London. The walls are, as was usual in old decoration, divided by bands of ornament into horizontal spaces with stone diaper, or the Gothic representations of curtains, and except that the glass in the other windows is common and poor, the decorations are more complete than is usual in England. Another church at Partick, a western suburb of the city, is still more completely decorated, all the windows being filled with stained glass, also by Mr. Cottier. Having no clerestory, the walls being low and being choked with gallleries, there was little space left for painting except on the roof, which is deep blue sprinkled with stars. The spire and some of the details of the architecture of this church are good. The third painted church is a Greek one, near the South Side Park, by Mr. Thompson. It has a clerestory filled with stained glass, carried on iron columns and beams, arches being disliked by the architect as unconstructional. The roof is like that of an Italian basilica, painted blue with stars on it. The ornament throughout is, of course, Greek in character. The effect of the interior is very fine, though outside it looks small—possibly from the enormous size of the door. It has a small stone dome, tall in form, over the front. The inside is lined with wood throughout, for the sake of the acoustics. Altogether it looks a deal for the money, having cost, with several halls and class-rooms, under £[illegible],000. Some of the older churches are handsome. St. Andrew's looks like a model; perhaps it was the prototype of St. Martin's-in-the-Fields, at Trafalgar-square. The steeple of St. George's, by Stark, the architect of the Hunterian Museum (which stood in the grounds of the old College, and is now destroyed), is very fine, and would have been finer had the religious feelings of the people allowed him to crown its five pinnacles with statues of our Lord and the evangelists, as he proposed; but any guide-book, however poor its illustrations, will give a better notion of these than can be given by description.

The art of architecture is obviously not asleep in Glasgow. With, of course, much that is beneath criticism—even if we had space for it—few towns can show a greater number of good modern buildings; and if we pursued our inquiries to the country houses of its merchants which stud the neighbourhood and line the Firth of Clyde, we might make another chapter instructive, in much to learn from as well as to avoid; for the architects have the merit of thinking for themselves.—*Architect.*

IMPROVEMENT IN THE MODE OF HANGING WINDOW SASHES.

We have seen the model now exhibiting at the Royal Institute of the Architects of Ireland of Bullivant's patent air-proof and noiseless sliding sash, as advertised in our columns. The principle is exceedingly simple and managable, and we are only surprised it has not been in use long ago. There are no parting slips as in ordinary frames, but the pulley stile is ploughed and fitted with metallic lining; the stiles of the sashes are also ploughed, into the grooves of which are fitted hard wood slips, easily removable and as easily readjusted, by which means the sashes can be taken out by any person of ordinary intelligence for cleaning. The slips above mentioned work in the groove of pulley stile with the least possible amount of friction, and effectually prevent draught; this groove also holds the sash-line, which is thus partially concealed; the sheeves over which the line passes work upon one axle of much larger diameter than the usual pulley box; they are concealed, but easily accessible; the meeting rails are rabbettod, thus fitting more closely than the ordinary sash. Altogether we are much pleased with the invention, and believe it to be, from its construction, if brought into general use, scarcely more expensive than the old method.

necessary to court the favour of the great to obtain public employment; now, the grand system of competitive examination has placed a competency within the reach of every student who is manly and self-reliant. The navy, the home and Indian armies, have thus become much more ably officered; and as clerkships in the poor law service are now to be won by competition, I feel sure the medical offices in that department will soon be made public prizes. The medical charity system of Ireland would then surpass that of England still more distinctly than it does at present. And lastly, the junior offices in our great hospitals must open to those who strive to win them by their own exertions. To the vast encouragement of study which such competition has given, I attribute the great improvement in the habits and character of our students. Twenty years ago, it being impossible for any one without much interest to get employment, students degenerated into "chronics," and became idle and dissipated. At the present day I maintain the student of medicine is characterised by professional earnestness, and by that benevolence which even the first steps in a noble calling cannot fail to inspire. Like other youths, he shows a fondness for the various amusements which this dear old city of ours provides; and, if they be not hurtful to his body, mind, or morals, I for one hope they never shall be curtailed.

SCHOOL OF ART.

EXHIBITION OF NATIONAL COMPETITION DRAWINGS.

The following circular letter has been received by the Registrar, Royal Dublin Society, from the Science and Art Department of the Committee of Council on Education, South Kensington:—

The Lords of the Committee of Council on Education are desirous that the drawings executed by the students who were successful in the late national competition of 1870, should be exhibited, as far as space may permit, at the forthcoming International Exhibition of 1871, as specimens of the work done in the schools of art in connection with the Science and Art Department. Each school of art will thus have an opportunity of showing what its present position is. I am, therefore, to request you to have the kindness to communicate the wish of their lordships to the students of your school whose works are amongst those in competition, and at the same time to inform them that, with the view of avoiding the expenses of retransmission to and from Kensington, my lords will be glad to learn that the several students and committees interested are willing to co-operate with them and become exhibitors, and that they do not object to the drawings being retained at South Kensington until the close of the International Exhibition next year.

Henry Cole.

ARBITRATION IN TRADE DISPUTES.

An exceedingly effective paper on "Conciliation and Arbitration," by Mr. Geo. Potter, in the *Contemporary Review*, serves as an admirable tide-mark to indicate the advance that has been made in one of the most hopeful movements of the day. The law on this subject cannot be said to be in a satisfactory state. The Bill of 1867 has been practically a dead letter; but what the Bill failed to do the parties immediately interested have done for themselves. The Nottingham experiment, with which the name of Mr. Mundella, now M.P. for Sheffield, is so intimately connected, has been tested during a not uneventful period of ten years, and has borne well every strain. Arbitration, according to the Nottingham vocabulary, is really consultation and agreement by representatives of employers and employed. The board is composed of eighteen members, nine of whom are chosen by the employers and nine by the employed. These meet on equal terms, and all disputes of every kind are referred to them for settlement. As a matter of fact, every question submitted during the last seven years has been successfully adjusted. The effects are, the cessation of strikes and the absence of any serious or prolonged discontent. The few simple rules made by the board in 1860 have never been altered, and 60,000 persons are now within the field of its operations. The working of the Black Country or Wolverhampton scheme has been not less satisfactory, but it has only been about half the time in operation. It regulates the building trades, including carpenters, joiners, and plasterers, and covers the whole ground occupied by the questions of wages, time, &c. The events of the present year in relation to the iron trade of the West of Scotland bring the question nearer home. The Blochairn strike, after carrying war into the whole district, came to an end through the intervention of an active member of the Board of Arbitration and Conciliation for the North of England Iron Trade, whose work in its own district was lately described as putting an end to war, waste, and uncertainty. At Liverpool, a plan, similar in its kind to those referred to, has lately been submitted by the operative builders to the associated masters. It will thus be seen that the movement, though a comparatively new one, has made and is making rapid advances. That it is a voluntary one, altogether unrelated to Acts of Parliament, is one of its most hopeful features. The suggestion that it would be well to give to the decisions of all properly constituted boards the effect of a legal verdict may be a good one, but we doubt the necessity for it. If the plan is seen to work well, and if it be really approved, common sense will surely teach both parties that the breath of its life is a firm and unflinching abiding by its results. Another suggestion, however, we heartily agree with—that these boards should have unlimited scope, and that they should deal with *all* questions that arise between masters and men. It may, perhaps, be going a little too far to say, with Mr. Potter, that "the day of strikes and lock-outs has come to an end;" but we are within the mark in saying that a few more vigorous and well-directed strides will bring us in sight of "a consummation devoutly to be wished for."

CORRESPONDENCE.

[*It is to be distinctly understood that although we give place to letters of correspondents, we do not subscribe* editorially *to the opinions or statements set forth in same.*]

FIRE INSURANCE.

TO THE EDITOR OF THE IRISH BUILDER.

Sir,—Some months since it was proposed to form a new insurance company in Dublin, to consist entirely of a resident Irish proprietary. It has not been spoken of lately, but I am of opinion such would be a great desideratum here. I know that some companies become their own insurers with success, and why not try the principle upon a larger scale by a number of mercantile houses clubbing together and forming a company of their own? It is really too bad that so much money should be sent across the water, while the only return we get is a large importation of Caen, Bath, Portland, and Scotch sand stones. I think I have seen some remarks in your journal that this tends considerably to the embellishment of our city. No doubt it does. But if our premiums were paid into the hands of a resident company, we would have something more for our money than imported stone; and, in addition, we would have the satisfaction of being enabled to ascertain whether or not we were insured at the lowest rates consistent with the risk.

The public have hitherto been under the impression that the abolition of duty on fire insurance would be a bonus of so much to them, but the contrary appears to be the fact. Many of the companies, I believe all, have increased their rates, in some instances fully 100 per cent. I for one have been paying a 5s. rate for the past thirty years without a claim of one shilling being made upon the company, and I am now paying more than double that sum, making the premium considerably beyond the former rate, duty and all. I know several others who are in the same predicament. The government, in a laudable spirit of encouragement to the prudent manufacturer and householder, dispenses with duty, and companies who have hitherto been enabled to create colossal incomes, and erect their offices more like palaces than business premises, seem determined the public shall reap no advantage, all being little enough for their own coffers. There is spirit and capital enough amongst the mercantile community of Dublin to defeat this. They should, as I advise, become their own insurers. A new and exclusively Irish company would have ample business to commence upon, and when our friends at the other side of the water would be glad to resume their old rates, they would find to their cost it was then too late.

A Subscriber.

IS CARLISLE BRIDGE TO BE REBUILT?

At a special meeting of the Corporation on Friday, amongst the other important matters discussed was the question of Carlisle Bridge.

The report of the "Carlisle Bridge Committee" having been read,

Mr. Norwood observed that, as the conduct of the council relative to this matter had been frequently impugned, he would propose that the report be published and circulated extensively. It included documents of considerable importance that deserved the most careful perusal before they committed themselves irretrievably to a large project like the present. It had been supposed by some that this council had abandoned the design of *improving* Carlisle Bridge, and the Port and Docks Board had also given up the intention, but that was an impression opposed to the real fact, for they had directed their engineer to prepare the necessary borings, examine the place carefully, and prepare estimates to be laid before the grand jury next year. There was another matter which he wished to draw particular attention to. A letter had been directed to him as chairman of that committee, by Mr. Turner (one of the gentlemen who sent in designs for the bridge), in which he charged the Corporation with a breach of faith in not selecting his design, inasmuch as they had adopted it some years ago as being the best. That gentleman wrote evidently under very strong feelings, but under a misconception, for the Corporation had nothing to do with the selection of those designs. There was a public meeting held some time ago at which prizes to the amount of £200 or £300 were proposed to be given for the first, second, and third designs for a bridge across the Liffey, each according to its order of merit. Advertisements to that effect were accordingly issued, and the selection was referred to the arbitration of Sir Richard Griffith, Mr. Downing, and some other eminent engineers. That was entirely the work of a private committee, the Town Council having no connection with it.

Mr. French said when a question involving an expenditure of about £80,000 was to be finally decided on, they should consider it very carefully, and study each design before finally adopting either.

Mr. Whelan was of opinion that the sum mentioned was too large, and that a durable and ornamental structure could be erected at a smaller cost. He had no objection that the report should be published, in order that there may be full time given for consideration, and that the public may have an opportunity of judging of it.

ABINGTON PARISH CHURCH, CO. LIMERICK.

The above church was consecrated on Tuesday week last by the Lord Bishop of Cork. It has been built to replace the old parish church, which occupies the site of the ancient Cistercian Abbey of Owney, founded by Theobald Fitzwalter, ancestor of the Ormonde family, who was buried within its precincts. It is constructed of white, buff, and red sandstone, after designs by Mr. J. Rawson Carroll, of Dublin, the contractor being Mr. Williams, of Borrisoleigh. The style is Geometric Gothic, and the ground plan comprises a nave, chancel, robing room, porch, and bell-tower, with spire. The chancel is separated from the nave by a richly molded and pointed arch of cut stone, supported on four polished red marble shafts, with carved capitals, and is lighted by a three-light window, having trefoiled and moulded arches, resting externally on red stone pillars, with carved caps, and internally on red and green marble pillars, also with carved caps. The west gable has a circular window, surrounded by eight quatrefoils within a pointed arch, supported on red stone shafts. The pulpit is of stone, enriched with carved work. The roof is open, with varnished timbers springing from carved corbels. The tower is square at the base and octagon above, and the belfry stage has eight openings, with moulded arches, resting on red stone pillars. All the internal finishings of doors and windows are of cut stone, and the floors of aisle and chancel are laid with encaustic pavement. It is intended to fill the east and some other of the windows with stained glass. The grounds round the church are tastefully laid out and planted, and the entire work reflects much credit on all concerned in carrying it into execution.

APPARATUS FOR CLOSING THE BOTTOMS OF DOORS.

This is an ingenious arrangement for closing the space intervening between the bottom of a door and the cill. It consists of a self-acting descending parallel bar or slide, arranged to work in a rebate formed in an outer mould, and connected to metallic plates, to which spiral springs are affixed, the bottom edge of the slide being scribed and fitted to the door, then covered with india-rubber or other pliable material, so that as a door thus provided closes, the end of slide comes in contact with the door jamb, and is thereby pushed forwards and downwards by the action of the metallic plates, which act in the same manner as cranks, and in turning wind up the springs. Immediately the door begins to open the slide springs up, and allows the door to open freely over any covering of the floor. The invention has been patented by Mr. Warhurst, of Whalley Bridge, Cheshire.

MISCELLANEOUS.

The post-office authorities have given notice that their horometrical machine in Sackville-street must have a holiday. "The Great Clock must be removed" It may be ready for another start after the Christmas holidays. The "monsters" in the vicinity of G.P.O. are still appealing to "the powers that be" for the removal of the railings at Henry street flank. They must exercise a *little* patience; "boards," in general, are hard to move!

Look to the Coin Deposits.—A singular theft, it is said, but more plural than singular, we fear, has just been brought to light at Plymouth. On July 28th last the foundation stone of the new guildhall, about to be erected in the town, was laid with great public and municipal *éclat.* Since that time to the present the work of erection has been going on at a part of the site some distance from the foundation stone, which, in consequence, has remained as it was laid, untouched and unbuilt upon. As one of the contractors for the building was surveying the work, he noticed that the foundation stone bore evidence of having been displaced from its socket. This aroused his suspicions as to the coins deposited, and, in order to satisfy himself, he told the men to raise the block. It took four men to do so, the stone being two tons in weight. It was then found that every coin had been carried off. As yet no clue has been obtained to the thieves, who must have numbered at least four or five men. Better deposit no coins than leave a distant posterity to suppose us a race of thieves. We have urged care in first stone-laying for years.—*Builder.*

The appearance of walnut may be given to white woods by painting or sponging them with a concentrated warm solution of permanganate of potassa. The effect is different on different kinds of timber, some becoming stained very rapidly, others requiring more time for this result. The permanganate is decomposed by the woody fibre; brown peroxide of manganese is precipitated, which is afterwards removed by washing with water. The wood, when dry, may be varnished, and will be found to resemble very closely the natural dark woods.

Locomotive Street Vehicles.—In originating the modern velocipede movement, as we not long since showed, the *Builder* suggested the use of various motive powers to be applied to velocipedes, Bath chairs, cabs, and even omnibuses; and, amongst others, india-rubber "accumulators" of power. This we observe, is now being done in America. The *New Orleans Republican*, in an article entitled "An Omni bus moved by Clockwork," describes a new self-acting omnibus which has recently been tried in that city:—"Underneath the carriage is what seems an enlargement of an American clock-spring made of india-rubber. There is a strong platform, on which the car is to rest, and to this platform is attached the by no means complicated combination of cogs and wheels, which, when acted upon by the elastic power of india-rubber, moves the car with steady motion at almost any given rate of speed. In front, beneath the platform, there is a large wheel, called in the specification of the patent the power pulley, among mechanics known as the master-wheel. It acts like the drum on which is wound the mainspring of a watch. By means of a circular lever, exactly like the horizontal wheel to regulate the breaks in ordinary cars, the master-wheel is turned, and the india-rubber wound round it until that remaining on the pulleys acquires extreme tension. When wound up, the contractile power of the india-rubber bands will give the requisite motion to the machinery for the propulsion of the car. The propelling machinery of the car is provided with a means of reversing its motion, which is acted upon by a lever adapted to the foot; by this means the car can be made to run backward as well as forward with equal facility. There is no necessity to stop the car in order to wind up the machinery. It can be wound up while at full speed with as much facility as a Lepine watch can be wound up while going."—*Builder.*

The committee of the Irish Auxiliary of the Life-Boat Institution have determined to hold in the Rotundo early in December a grand bazaar in aid of the funds. More than 2,000 disasters, involving a loss of nearly 1,000 lives, occurred in 1869. The society saved more than 5,000 lives.

The news of the suspension of Messrs. Bewley, Webb, and Co., the enterprising iron shipbuilders of Dublin, with liabilities estimated at £150,000, has been received with expressions of much regret. The firm has a high reputation for doing honest work, and possesses the distinction of having still afloat every one of the numerous ships and steamers which have come from their hands; and it is notable that the Knight Commander, the first ship launched from their yard, was the only vessel which rode out the terrible cyclone at Calcutta uninjured, whilst the little steamer Manilla safely weathered the storms of the Atlantic and Indian Oceans, and now plys in the waters of the Philippine Islands, the only steamer on the coast. The books of the firm have been placed in the hands of accountants, and it is to be trusted that very quickly the business of the firm will be resumed.

A Remarkable Man.—Some time ago we alluded to a townsman of our own, Mr. William M'Meekin, as being truly remarkable for physical ability at a very advanced age. During the present week we paid our worthy townsman another visit, and found him working energetically at his stake—being by trade a nailer. He is now in his eighty-ninth year, and able to turn out 1,500 nails daily, earning on an average 2s 6d. a day, notwithstanding the great reduction which has recently been made in that article of manufacture. He had served three years to his trade at the time of the Rebellion, so that he has now been "as busy as a nailer" for nearly seventy-three years! During his lifetime, taking only what he now turns over his stake daily, for the purpose of basing a calculation, he has manufactured with his own hand at least 33,696,000 nails, and used for that purpose several tons of iron. He wore glasses for thirty-seven years, but some time ago, finding them rather impeding his vision than assisting it, he threw them aside, and can now follow his monotonous and active labour perfectly well without them. He still resides and follows his occupation in the house in which he was born, and he is not likely to leave it until his friends and neighbours remove him from it to his last resting-place, which, from all appearance, may not be for some years to come.—*Larne Reporter.*

Dick Whittington's Stone.—The Goths of London are rampant in the neighbourhood of Highgate. Whittington's Stone, one of the few real relics of antiquity left to us, has been turned into a publican's advertisement. The stone has been refaced and "restored" (save the mark!) and railed in, with a lamp over it. The protection of the relic is well enough, but the "restoration" is effected by carving the stone with dates, &c., and the information that the expense has been defrayed by—the publican whose beerhouse fronts the monument.—*Court Circular.*

Expenses of the Working Men's Exhibition.—The expenses of the Working Men's Industrial Exhibition at Islington, which was closed on Tuesday, have exceeded the receipts by about £1,000, and the managers have been in consequence unable to complete the list of awards. It has been suggested that some of the wealthy city companies should assist an Exhibition which has been found to aid the technical education of working men, and has brought into notice a large number of inventions.

Charlemont House, Rutland-square, Dublin, advertised to be sold in the Landed Estates Court on Tuesday last, has been purchased by private contract by Mr. Alexander M'Clintock, Solicitor to the Board of Works, on behalf of the Government.

Exploration of the Rocky Mountains.—The Yale College scientific party, who have been exploring in the Rocky Mountain region, have discovered, among other things, an ancient lake bed, containing great numbers of extinct crocodiles, turtles, serpents, and other fish, with the remains of rhinoceroses and other tropical animals, most of which are new to science. The expedition is now on its way to California.

Professor Fowler, in the *Philadelphia Photographer*, describes a process for producing enlarged photographs without solar printing, which he thinks will be found good and useful. The small negative is made in the usual manner. He advises that the picture be taken with a long-focused lens at a long distance, only one principal object to be included in the view. From the negative print a transparency or positive upon glass. From this transparency make an enlarged negative in the usual manner of any size desired. With the enlarged negatives print enlarged positives. The glass on which these positives are printed is to be rubbed over with white wax dissolved in ether, and polished with clean silk cloth. A colourless collodion made with ammonio-cadmium is used. After the picture is fixed, while yet wet, it is toned for a moment with a dilute solution of chloride of gold, afterwards with bichloride of mercury; wash the picture and let it dry. The paper to receive the picture is prepared by floating on a solution of gelatine, ten grains to the ounce, and dried. For use, float the paper on clean water until it lies quite flat, then draw it once through the water and drain. Now place it upon the collodion film of the picture, cover with blotting paper, place flat weights thereon, and let stand until dry. Then, by means of a knife, cut the edges of the collodion, and the picture may be raised from the glass mounted on the paper.

Perfection of Art in Watch Manufactures.—"The stranger in London cannot fail to be struck with the magnificent establishments of goldsmiths with which the city abounds. Such displays as are presented to the eye are rarely to be met with in any other city in the world; indeed, whole fortunes are concentrated in their windows. Foremost among such establishments is that of Mr. Benson, of Ludgate-hill and Old Bond-street, London, watch and clock maker to H.R.H. the Prince of Wales, which may truly be called the home of art. Everything exhibits the most perfect taste; and, while the beautiful is thus cherished, the useful is also carefully studied. Mr. Benson has gained a high position for the superior manufacture and artistic designs of his watches especially."—*City Press.* For prices of watches, clocks, jewellery, chains, &c., see illustrated pamphlets, which are sent post free for two stamps.

BANKRUPTS.

Arthur Crosbie, of Tralee, in the County of Kerry, builder, to surrender 15th November and 6th December.

INSOLVENTS.

Alexander Irvine, of Donegall-pass, Belfast, in the County of Antrim, out of business; previously of Bangor, in the Co. Down, grocer, wine and spirit dealer; formerly of Belfast aforesaid, stonecutter.

NOTICE.

Through an oversight of our printer a transposition has occurred in a portion of our impression. The continuation of Dr. Mapother's address (273) *will be found on page* 280.

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The Irish Builder.

Vol. XII.—No. 263.

A Good House.

House is there in disguising a truth from ourselves and the rest of the world. In architectural circles during the past five-and-twenty years we have been very great upon 'Ecclesiastical' Architecture; just at present we are very grand and strong in the 'Civic' line: but while concerned over these, no doubt, very grand and elevating studies, it is unquestionable that in the architecture of our hearths and homes, in honest middle-class house-building, of homes skilfully and economically planned, comfortable to live in, and withal pleasant and home-like to look on, we are in a state of backwardness truly deplorable.

Nor to any attentive observer of the situation is the prospect very cheering. Architecture continues to make great strides since the reviving impetus it acquired thirty years ago, but still the *Builder* and *Building News* continue to present us from time to time with such specimens of architects' house-planning and design—and we presume they may be accepted as average specimens of contemporary work—as tempts us to wonder how such 'architects' as their designers are permitted longer to live on the face of the earth—as architects,—and that an enlightened and common-sense public is so very easily housed and pleased.

Sterling English common sense, partly from business-like nineteenth century activity, partly from traditional practices of home-fashioning, has been the great check—little thanks to 'new-light' architects—to the utter degradation of middle-class house-building among us. We have had not a little—in a very brisk demand for the article—of vile sham 'Gothic,' and viler so-called 'Italian' carcase-and-stucco villa building of the clumsiest type and most ill-considered character of planning, but sylvan England has, nevertheless, not wholly lost an art—once shared by the towns—of employing natural honest local materials in forms and modes at once sensible and charming in the landscape. A keen appreciation of home comforts and the housewife's thrift—still small thanks to the architects—have further ensured an attention to domestic convenience and the fitness of things which have made many unpretentious homes, scattered broadcast over rural England, something to be dwelt on with satisfaction and pleasure.

And here, at the risk of exciting indignation, the interests of truth compel us to tread on the very susceptible corns of our countrymen. Such homes as we have referred to, as a class, and the very spirit that creates them is as yet utterly unknown in Ireland. We continue to be conservatively satisfied with the most elementary and least ingenious and convenient types of house-planning. We ignore attention to the comforts of 'little things;' and, while in other countries, buildings for the commonest uses often assume pretty and picturesque exteriors, with us, whether owing to climate, the exigencies of our materials, or the traditional mode of using them, or all three combined, our commonplace structures are generally the baldest, ungainliest, and least pleasing additions to a landscape conceivable.

While in England a fair number of architects have by isolated works, and in Ireland a very few in cases very isolated indeed, redeemed the profession from a charge of universal incompetency in this respect, we have also labored in Ireland under the additional disadvantage of having before our eyes really no examples of an ancient homely architecture such as England abounds in, to give a key-note to our manner of house-building. In the absence of these it will be readily perceived of what double importance to us good text-books on house-planning, good works illustrative of ancient domestic architecture and recently-erected well-designed houses would be. It is in this very department, where the greatest crying want existed, that architectural literature has been most barren, and in any fruits it did bear, most contemptible. We shudder when we call to mind some of the works on 'house-planning' which in past years it has been our unhappy fate to study and notice in these pages, which a consideration for the good intentions of the publishers, and the fair provocation given by an unoccupied field, constrained us to treat of with an unwilling leniency, or 'damn with faint praise.' With a mind relieved by lapse of time of the very names of the books or their authors, and with no risk of giving pain, we may now call up for judgment some of the greatest rubbish ever collected together and dignified with the name of literature. It would seem as if publishers, anxious to supply an evident want, had, in failing to find professional editors who knew much of the subject, stumbled on ones who knew nothing whatever, and on plans old-fashioned, stupid, and ill-considered, and in many cases full of downright mistakes and impracticabilities.

Professor Kerr's well-known and useful work is one of a very different calibre from such as we have stigmatised. It is a very useful book by an architect of real mind and ability, and to be spoken of with all respect; but, after a long, dreary experience, we cannot express with what unmitigated satisfaction we hail a new work[*] on this subject by Mr. W. Wilkinson, architect, of Oxford, a brother of Mr. George Wilkinson, well known to us in Ireland as himself no mean contributor to architectural literature, whose 'Geology and Ancient Architecture of Ireland' is, after many years' use and test, still an almost indispensable book of reference in the Irish architect's library. Mr. W. Wilkinson has collected in a volume 'got up' with great good taste and attractiveness, a number of illustrations of works executed by himself in his own district of country, of every variety ranging from small farmhouses, keepers' lodges, and so forth, to mansions of some moderate pretension. The illustrations are etched plans and perspective views, admirably executed, and in themselves admirable models for young architects or mere professional draughtsmen to set before them as models for the getting-up of sketches. We have very carefully conned over the plans in this book again and again, and have ever risen with renewed satisfaction from the scrutiny, struck not less by the great variety and ingenuity of the plans it contains (forty-five in number), than by their excellent arrangement and thoughtful contrivance and care for economy. In their exteriors these common-sense plans are developed into quiet, 'unacrobatic,' and yet picturesque elevations. It would, of course, be unreasonable to suppose that in grouping and design they all attain an equal standard of excellence; but, with an evidently laudable desire to avoid repetition, the variety of suggestive design presented is particularly valuable. Above all, there is not a design throughout the book that is not imbued with that quiet, home-like, and essentially English spirit and aspect which, at a time when the feeling and the excellencies of English mediæval architecture appear to be relaxing their influence upon our architects, is so much to be desired.

The illustrations are prefaced by some well-expressed and pithy elementary observations on house-building—just enough to give a proper amount of information for the guidance of an intelligent client, and precisely what should be placed before an architectural student to direct his mind to the essential conditions with which he must proceed to consider house-planning.

Paterfamilias in this country has yet a great deal to learn and unlearn about his house. He has to learn that his "square block of a house," which is his standard, does not always possess every perfection—that there is no magical virtue or condition of comfort or special respectability in stucco plaster and a cantaliver roof; and that a drawing and dining room, one on either side, with a draughty hall and staircase running from front to rere in the middle, is not the only or yet the most comfortable type of plan known to human art. He may *say* he prefers it, but when he finds that his neighbour builds a house wherein Gothic architecture does not consist in darkness and mullioned windows, pepper-box turrets, steps upstairs and downstairs and in my lady's chamber, and smoky chimneys, and where even pointed arches and buttresses are not absolute necessities of existence in correct Gothic condition, he may waver in his present almost religious code of faith. But when he fully grasps that it is not, under ordinary circumstance, the outward shell of his house and the manner of it that makes a difference in the cost so much as the *size*; that in planning a good house there is required—of a certain kind—more ingenuity than in designing a cathedral; and that in a cubic space of equal content his neighbour enjoys more room, greater convenience, less bad smells and catarrhs, and no draughts, and, in fact, a great deal more for his money: then indeed we may expect an era of reform in house-building. Meantime, we claim Mr. Wilkinson's book as a valuable and timely contribution. There are some people who are hopeless and will continue;

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[*] "English Country Houses. Forty-five Views and Plans of recently-erected Mansions, Private Residences, Parsonage Houses, Farm Houses, Lodges and Cottages, with a practical treatise on House Building." By William Wilkinson, architect, Oxford. London and Oxford: James Parker and Co. 1870.

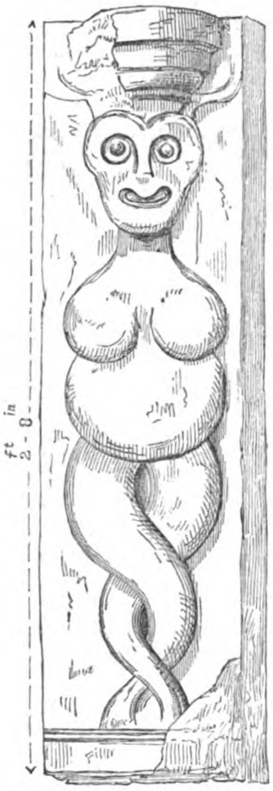
without desiring to do anything, better to 'drive a trade' in buildings, which are a disgrace to the age. Those however who are thoughtful in pursuit of their profession, and have discovered that there *is* something in house-planning, will keep Mr. Wilkinson's book by them, and make it their frequent study.

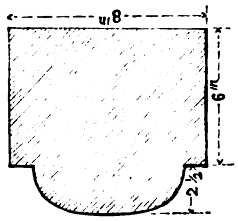
ENGINEERING ACCIDENT.

Just as we are going to press the news of a melancholy occurrence at Greenore Harbour works reaches us, involving the death of Mr. Charles Olley, of the firm of Connor and Olley, the contractors, and injuries to four other gentlemen. It appears that in making foundations for marine structures the action of the sea upon the concrete leads to great loss and delay, and the efforts of engineers have been for some time past directed to making gigantic blocks of solid concrete, upon which the heaviest sea would have little influence. In this way blocks of concrete, of from one to ten tons, have been made at Greenore, and sunk in the foundations. But even these large blocks were not considered of sufficient size, and latterly blocks of concrete weighing from 90 to 100 tons were constructed on the beach immediately adjoining the works. Most ingenious machinery was erected to remove the huge blocks to the sites selected for them. The *modus operandi* for lifting and lowering these large blocks of concrete partook largely of a hydraulic character. Two large barges were lashed together stern and stern, with just sufficient space between to allow of the blocks being raised or lowered between them, and a timber platform was thrown over the two barges, with the exception of the space alluded to. On this platform, resting on the two barges, a powerful "derrick" or crane was erected, the grapnels being just suspended over the opening in the centre. The grapnels were attached to the block of concrete while it lay high and dry on the beach, and then as the tide rose, the floating of the barges raised the block of concrete also. The barges were then towed to the spot where the block was to be deposited. Up to this time all went well, and the experiment was witnessed with the greatest interest by all the party who crowded the barges, and Mr. Olley was congratulating Mr. Barton, the head engineer, upon the success of the experiment, when suddenly a dreadful crash was heard. Some part of the machinery gave way, the block sank with tremendous force, lashing the sea with great waves, and the chains, blocks, wooden beams, and other apparatus of the derrick, fell upon those immediately beneath. Mr. Olley was struck on the head and face, and also on the body, and killed instantaneously, and several were knocked overboard. Mr. Foxall, a young engineer, who had just put on a diver's dress to go down and assist in placing the block, was struck down, and had both legs broken. Captain Graham, of Carlingford, sustained a broken arm; and Mr. Manistey, an engineer, was also severely hurt.

CARVED STONE EFFIGY, ROCK OF CASHEL.

During a recent visit to the venerable pile of ruins which crown the summit of the Rock of Cashel, my attention was directed by the *custodi* then in charge of the buildings to an extraordinary carved stone effigy, a sketch of which forms the subject of the accompanying illustration. This hybrid monster exhibits a singular combination, consisting of the head, breasts, and body of the human female, but without any trace of ever having been provided with arms, the lower extremities being those of a fish having two bodies entwined, with the tails turned outwards, resembling feet for the support of the figure. The head, which is surmounted by a rude capital, having Classic moldings and some approach to volutes at either end, has the mouth wide open, eyes large and circular, a portion of the nose and upper part of capital being fractured. The entire figure measures 2 ft. 6 in. by 8 in. in width, and 2½ in. in relief, and appears to have suffered little from the ravages of time, although evidently of antiquity earlier than any of the other existing carvings in the present ruins. The general character of this grotesque object might claim for it a Persian or Hindu origin; but the fact of the material on which it has been executed being identical with the large grained crystalline limestone of the district, proves it to have been of native workmanship.





I was informed it was discovered during some excavations at the base of the round tower situate at the southern angle of the chancel of the great church, its connection with which may in some measure tend to support the theory that the towers were the temples for heathen worship, whether dedicated to Baal or to idols embodying, in a measure, the human with the brute creation.

The following extract from the writings of the immortal Moore on this subject may serve to elucidate the mystery in which ages have enveloped the history of the religious rites of the earliest periods in this country:—"To the same later ritual belonged also those images, of which some fragments have been found in Ireland, described as of black wood, covered with thin gold, and the chased work on them in lines radiated from a centre as is usual in the images of the sun. There was also another of these later objects of adoration, called Kerman Kelstach, the favourite idol of the Ultonians, which had for its pedestal, as some say, the golden stone of Clogher, and in which, to judge by the description of it, there were about the same rudiments of shape as in the first Grecian Hermæ."

Charles Geoghegan, F.R.I.A.I.

LUMP CONTRACTS AND THEIR SUBSTITUTE.*

(Concluded.)

In the anticipated break-down of the lump-contract system, we may see the evil result of compromising an obvious difficulty, instead of looking it fairly in the face. Under the old measurement-system, builders ran no risk of loss from any professional under-statement of quantity of work: their losses lay usually in the inadequacy of its price. That, if quoted from an agreed schedule, filled up by themselves, was a matter under their own control, and capable of future remedy. But when the existing lump-system came into use, the wildest confusion came with it. Architects of reputation refused to receive lump tenders based on anything short of proper estimates in detail; and as they themselves, incapable of foreseeing the evils that have supervened, neither issued bills of quantities of their own, nor nominated surveyors to prepare them, each builder had, at a heavy cost, to call in and pay his own special surveyor, and get up his tender as he best could. It was a sad change for the worse as far as builders were concerned, and after a few years' trial it had to be abandoned. Gradually architects themselves got into the habit of issuing quantities; and but for their own want of courage, and their fatal recourse to an ignoble compromise, the lump system might have been satisfactory to every one, instead of being, as we see it today, reduced to an undignified source of contention. There was a difficulty, or "lion in the path." The architects of the day failed to look it in the face, and deal with it intelligently, as they easily might have done. They simply put off the evil day, which now cannot be ignored any longer. No succeeding body of architects—not even the Institute—has retrieved the false step; but has, if anything, aggravated the difficulty. The difficulty was, how to deal with errors in admeasurement: no very great difficulty, if we come now in 1870 to look at it in the light thrown on it by that demand of the London Builders' Society to have the quantities bound up with the contract. It might, and it should have been met in this way. By prefixing to our architects' quantities some such unmistakeable heading as this:—

> "These quantities have been taken out solely by the architect, who believes them to be correct within a margin of per cent. on each item, and, if so, unalterable *pro* or *con*. Seeing, however, that the contractor has had no fair hand in their computation, but that, contrariwise, they are, if anything, likely to minify items in the interest of his committee, said architect quite intends to overhaul them at completion of works, and certify for all ascertained errors of want or of excess beyond the said margin, as the case may require."

Instead of a plain-dealing clause like that, which would have satisfied every equitable client and contractor, we quantity-taking architects turned our ignoble tails to the difficulty; clean shirked the question of infallibility, and threw it, with some such clause as this, on the contractors; abdicating our essential functions as equity-judges-in-contract, and assuming the poor position of simple partisans in the sole interest of our clients,—absolutely unfrocking ourselves, in fact; and this at the invitation of no one in particular:—

> "These quantities are assumed to be correct; but the contractor is himself to see to their accuracy; as no alteration will be made in his contract amount in event of any error therein being, after its signing, discovered."

This latter kind of clause has, we think, disappeared in the metropolis; but, if we mistake not, it still flourishes in provincial towns. In London, as we have seen, architects don't, as a rule, take out even their own quantities. They nominate surveyors to do it, but won't be responsible for what they do. Finally, as we have already shown, parochial boards and other committees have taken to nominating the surveyors on the same principle—or want of principle—that of absolute repudiation of the sufficiency of their own documents. In these hard times there are not too many building-surveyors who, even when paid the whole of their orthodox 2½ per cent., can draw a cheque for (say) the omitted wing of an asylum. How then are contractors to extract cheques in such cases from poorer professional men, whom the metropolitan parochial boards are creating by a beggarly "remuneration" of some ¾ per cent.? What with the contractors who ought not, the surveyors who cannot, and the parochial boards and their architects who will not be responsible for the quantities, it may be fairly said that the lump system has come at last to a dead lock. Perhaps the sooner it comes to an end the better for every one connected with the building trade. London builders are not to blame, nor are the surveyors. It is the fault of the architects, who, to reverse the language of Lord Derby, have got the lump system into a "muddle," from sheer indisposition to assert their unquestionable right to "meddle" with this quantities question. It is the professional question of the day. Let us openly discuss and deal fairly with it—we architects at least, do not quite repudiate the adjustment of tenders, day-bills, and balance-sheets.

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* From the *Building News*.

The request of the London builders to have the quantities bound up with the specification is a very natural one; and while it is plain, if these documents are to be prepared by independent surveyors, committees will never accede to the proposal, we think it only right that, where they have been issued (as in the provinces) by their own agent, the architect, the quantities should form part of the contract. There is not a more respectable class than that of the London building-surveyors; but at present the attitude of the public and of their architects towards them is too antagonistic to warrant the hope of their quantities being quietly annexed to a specification. In London at least we fancy we can foresee a far better field for their intelligent service of the building public than is now afforded them for the issue of quantities, for which no one will be responsible, and for which no one as it seems, will any longer pay an honest price. As matters are now being managed it is hardly worth a surveyor's while to undertake a bill of quantities, so full of risk and worry and gambling is the lump-contract system. We will conclude by suggesting a substitute for it, with a brief glance at some professional wants it would supply, and some special evils of the existing system, which we cannot help thinking it would quite remove, and so make building operations more respectable than they now are. Our suggestion, such as it is, is based on the old-fashioned idea that an architect ought not to (as some suppose) act as a mere cunning jackal to his client any more than, as that odious thing, a partisan of the contractor; but that in the words of the council of the Institute, "he is expected to exercise a just and fair judgment between the two parties." Let us try if we can to again set up little equity courts in our architects' offices, to inspire confidence in the minds of sterling tradesmen who enter them; and to, if we don't get it, at least deserve the respect of all fair-dealing clients, the only men worth conciliating. This can only be done by assuming, on the commencement of a contract, that, by our efforts to afford fair play to both client and builder, no one need be put to the delay, the worry, and the cost of an arbitration. Let us shut our eyes, as well as we can, to the possibility of such an evil; yet let our own office adjudication of our contracts be so complete in all its documents—so easy to trace—that if an arbitration should be called for, the whole arcana of the transaction, embodied in the bills of quantities and admeasurements, with all their details, can be culled from our own archives—our own pigeon-holes—and laid in black and white as authorised documents before the referee. As matters are now conducted we act on the very reverse of this principle—nay, we set up painted cabinets in our studios, with such innocent things as contracts, measuring and valuing, arbitration, specifications, and extras, depicted thereon, for our own especial terror, as "hideous" monsters, monsters "with a rule," and we know not what else! They are all terrible matters in their way, and sadly prosaic; but, if architects are all to indulge in this over-refined luxury of the fear of them, who on earth is to deal with these "gorgons and chimeras dire"; and what's to become of the clients?

But the "substitute" for lump-contracts: well, we propose to do away altogether with irrevocable mysterious quantities which are for no one but the contractor and his surveyor to see, and which it is naughty for some architects to even talk about. Let quantities be taken out as now, whether by surveyors or by architects it matters not to the scheme. Let, only a moderate fee be paid for them—a percentage as now, but proportioned to the mere professional odium (not pecuniary liability) incurred by inaccuracy. Let the dimensions and abstract of these quantities be lodged in the architect's office for the use of his drawing-clerks in preparing detail drawings. Let the tenders be submitted as now; and by all means let the architect price out (or get a surveyor to price out) a bill of quantities to be sent in with the rest of the tenders: this will be his estimate of the cost, for the client to quote for all time—instead of some fancy sum which he and his architect might have talked of while the preparatory sketches were being discussed. Let the client, if he hesitates to proceed and wishes to throw up his project, pay the fee for the quantities (not to be used) which, as they then involve no responsibility at all, had best be divided between the surveyor and the lowest contractor, as may be easily arranged. Let the client, if he elects to proceed, quite understand the accepted tender is to be the basis of not a lump-contract but a lump-estimate, whose bill of quantities with its prices is then and there to be given up to the architect, to overlook as free from obvious error or "cooking" of prices; and if he, the architect, is satisfied with it, let the work proceed on the prices or charges for separate items. Let the gross amount be divided into instalments for certificate, payable in two, three, or four weeks (according to amount) after work has arrived to prescribed stages (to give time for careful admeasurement of the work at the contract prices), and let the architect (if work has satisfactorily proceeded beyond that stage, so as to afford him fair security) certify for payment of the whole sum, the client bearing one moiety of the measuring fee, added into the amount of instalment, and the contractor (unless his surveyor has done half the work) paying the other moiety: there is no reason whatever why the contractor should not by himself or his surveyor assist in the preparation of these measurements for certificate: they would save the architect an infinity of anxiety, as to what were or were not safe amounts to certify on account, with much misunderstanding between himself and his contractor on a very fruitful subject of contention. In this way let the proper sum due for each instalment be ascertained and (if he have not himself personally ascertained it) be laid before the architect for certificate, even to the preparation of the final account, subject as now to the drawback of a reserved balance. In this way we propose to get rid of balance-sheets and of questions of extras and omissions altogether. As to works avowedly or fabulously added by the client, the architect might, if he preferred it, have them measured up in a separate "black book," to show how guiltless he is of them. If he be wise he will let these "additions" go into the general account; for clients who have to draw cheques for these extravagances don't like to be reminded of their origin. It is best for the architect to stand godfather for the whole cost; and indeed by the scheme we are suggesting the usual wrangle about these questions of individual culpability would disappear, for it usually has its origin, not in the heaviness but in the unexpectedness of the builder's claim.

This, roughly stated, is our humble suggestion for a substitute for the lump-contract system. It may, for aught we at present know, be fraught with evil; but with very long experience of building disputes and arbitrations, we are unable to foresee it. Let us take a review of the proposal, and endeavour to consider how it would most likely affect the four classes of grumblers at the existing system—the clients, the contractors, the architects, and the building-surveyors.

The client would be deprived of his definitive lump-contract, which, if it were ever really reliable, would be fatal to the entire scheme. But it is, as we have already shown, quite illusory. A client now never knows what a building erected by lump-contract may ultimately amount to. By our proposal he would infallibly see, instalment by instalment, how far his building was likely to exceed the original tendered estimate. He could pull his architect up, to use a driver's phrase, at once; and no architect, seeing his client's indisposition to pooh-pooh large augmentations of the early instalments stipulated for in the "lump estimate," would dare to go on increasing them. A parochial architect would take care to steer uncommonly close to the wind; he might possibly get over the "scrimmage" that would ensue on the superimposition of £100 or so on a first instalment; but he'd take care it was not tried upon a second one. As to the cost of the quantities, and of surveyor's fees for measuring, these would if anything, be lighter than they now are; while the services, as we could easily explain, would be far more valuable than they now can be. There would be no getting in of excessive tenders and having, *per fas aut nefas*, to cut them down to somebody's sure loss; nor would work have to be "scamped" to meet blunders made in the original tender—an evil which clients are now often complaining of. Clients don't want bad work; and when they get it are the very last people to felicitate themselves on having got it for a small sum.

The contractor would be greatly benefited by the change. He would have no anxiety about surveyor's computations, or architects' arbitrary repudiation of his claims for work honestly done. There would be little or no inducement for him and the architect to be, as now, wrangling "all through the job" about his over-drawing his money or what was to be done about his day-bills. He would, in fact, have few if any day-bills to produce, as the periodical admeasurements would reduce his claims as nearly as possible to mere "measure and value" by the ratio prices of his lump-estimate.

The architect, with or without a surveyor "to see fair" on his behalf, would simply draw out what he felt was needed with all latest improved ideas. Alterations would not, as now, necessarily involve "extras." His position towards both client and builder would be materially improved. He would, of course, share in all the advantages predicated for the client. He of all men would rejoice to have got rid of extras and day-bills—day-bills that lie for months on his desk untouched, because unintelligible and beyond control, and which can only be in the end sullenly passed or savagely repudiated *in toto*. If there is a skeleton in an architect's closet, or "a monster," without "rule," to be added to his "painted cabinet," it is surely a day-bill!

The building-surveyor, who is now a grievous sufferer by the existing system of gambling with bricks and mortar, would be left to the quiet pursuit of his profession, with a certainty of being paid for whatever he measured. Now he too often makes out quantities for nine out of ten contractors who "go-in" for a contract; it is taken by the tenth man, who has taken out his own, and the surveyor gets nothing, which is a scandal: or he takes out the quantities, the job doesn't go on, and he is left to his remedy at law against the architect or the committee who employed him. His calling is anything but a satisfactory one; and we have already seen how its shortcomings have been aggravated by the local boards. Our system of tentative lump-estimates would at once relieve him of these irregularities; and, indeed, the office of building-surveyor to a non-measuring-architect in large practice would be an enviable one, in high esteem, as it should be.

The foregoing are a few of what appear likely results of the change suggested. That they would be popular with every class of client, contractor, architect, and surveyor, we will not maintain. We have thought the matter over very carefully, and with a very sincere desire to see building operations, where architects and surveyors are concerned, conducted on a more satisfactory principle, without, if it be avoidable, the cumbrous machinery of guaranteed quantities and arbitration; and we would gladly see the strictures of our readers, if any, directed to the same end. Why should we pay for guaranteed quantities to meet the remediable evil of money having got into John's pocket instead of Joseph's; or incur the delay, the bother, and the cost of arbitrations, when the public has not even the disposition to pay for architects and surveyors, who might, if it makes proper use of them, save all further worry and expense?

B

ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND.

THE PRESIDENT'S ADDRESS.

Gentlemen,—It is my most pleasing duty to welcome you to-night, and utter as it were the prelude of what I hope will, as the session passes on, prove during its course a rich concert of varied, but useful, harmonious, and instructive utterances.

We are at this moment at a most eventful point of the history of the modern world. The nation which for three centuries past has been the leader of public opinion in Europe, when seemingly at the acme of its greatness, has in three short months collapsed: I know no other word by which to express the suddenness and completeness of the overthrow. Three months ago a quarter of a million men in array—the flashing light of former victories playing around their bayonets—stood marshalled ready for invasion; while Europe held its breath in anxious expectation. Where are they now? The newly-raised mounds on battle-wasted fields, the tainted hospital wards, and the dreary walls of a foreign prison are now their home; and the enemy who were to have been overwhelmed by the shock of their onset are spread out in fan-like dispersion over two-thirds of the realm of France, and starvation is the only alternative to save its capital from such a rain of hellish missiles as mortal ingenuity has never before brought together for the destruction of any doomed city. Shall she perish? Shall Paris the proud, Paris the wanton, Paris the beautiful, where all things belonging to modern society, either for good or evil, had their highest development—Is utter destruction to overtake her? or will some remains of reason and common sense, still lingering amid the common madness of people and rulers, exhibit itself even at the eleventh hour, and, by a tardy confession of guiltiness of wanton attack and acknowledgment of the futility of resistance, avail to avert the impending destruction? That it may be so, all men must instinctively desire and pray. Should it not be so, the destruction of the finest city of modern Europe, even from the midst of most deplorable and irreparable losses of every kind, will be of inestimable value as practically preaching the lesson—much wanted in this generation—that you cannot remove, one by one, all the foundations and supports of social order until the only one left to preserve its cohesion is mere brute force, without the impending ruin and destruction of the existence of the nation. That the Chartist cry, "No King, no Lords, no Commons, no Church," is sure, sooner or later, if carried out, in the bitter irony of events, to be completed with "No People."

A topic of peculiar interest to ourselves has occupied a good deal of attention lately; and the discussion of it has caused a good deal of criticism—of a more or less depreciatory character—to be directed to our profession, its claims, its charges, its position, and its organization. I allude to the well-known case of Mr. Ayrton, Chief Commissioner of Works, and Mr. Barry, as architect to the Palace of Westminster. It is unnecessary to occupy your time with any comment on the manner in which this controversy has been conducted. It is worth while, however, to advert to some of the points involved in the case, to remove misapprehensions in the public mind, which have prevailed even in quarters where the habit of judicial caution would, one would have supposed, have caused at least a suspension and hesitation in pronouncing against the custom of an honorable and not unlearned profession which has prevailed throughout the whole extent of Great Britain and America, and had so prevailed within the memory of man. A custom of such men, and so prevalent, is not to be condemned and dismissed as absurd without weighing all the circumstances. The case of the architect has to my mind never been fully or properly stated. Very important elements of it have been left merely implied by one side, and have not been appreciated by the other. I take it that our case, our whole case, stated broadly but simply is this—"After affording the client the full use of the plans, we claim the ownership of them, that they are ours, and that we have a right to them, that this right is founded in fairness and common sense, and has been maintained *semper et ubique et ab omnibus*." This is at once a tradition and dogma of the profession; and the only modification of this right is the right of the employer to the use of the plans as far as required for the execution of the works designed, or for explaining details of construction after execution. However circumstances may vary or modify its application, this is the right which we architects claim, which we all claim, which our fathers in the profession claimed before us—we claim no more than they did, and no less; even as they charged at the rate of 5 per cent. for the invention and use of their designs, we charge the same for the same; even as they gave only the use of the plans showing and explaining the invention, so we give only the use in the same way and to the same extent. What is there unfair or monstrous in this? In what way are the public defrauded? We have the same grounds for claiming the proprietorship in our plans as we have for charging 5 per cent. Will any judge say to a jury that an architect is not entitled to charge 5 per cent. for his services? Will he not rather say, and be bound to say, "It has been proved that 5 per cent. is the usual and customary charge for the services of an architect, and if those services have been performed, you must measure the compensation to be paid for them by that scale." Now here we have a sort of equation: substitute proprietorship of plans for the 5 per cent. charge, and the judge's charge would run—"It has been proved that the proprietorship of the plans, according to the use and custom of the profession, remains with the architect, and you must find accordingly." The cases are perfectly parallel. It is not a question of feeling or fancy, or even reason; it is a simple case of barter and exchange, and therefore to be ruled by custom and usage. Only it happens that everyone knows that an architect's usual charge is 5 per cent., few have the opportunities of knowing exactly the limits and boundaries of what is contained and included in what the architect is bound by custom to give for the 5 per cent.

It is stated that a case has been submitted to the Attorney-General of England on behalf of the Crown, and that his opinion is adverse to the claim of the architects. This is of very little importance; counsel advise on the case put before them, and on that case only. Now, in every dispute there are at least two sides; and, before it can come on for trial, at least two counsel, more or less learned in the law, must advise each that the client who consults him has a good case, and yet one of them must have a bad one. It would spoil a good many actions if only both cases could be submitted to one counsel; many a busy barrister, in such a state of things, would be reduced to the state of Neal Malone, the pugnacious little tailor, "blue-moulded for want of a fight." There can be no doubt that the opinion of the English Attorney-General is deserving of every respect, but until we see the case on which it was formed and expressed, we shall be premature in assigning any weight to it; and the previous history of this transaction, into which so much passion and prejudice have been intruded, leads one to view any case that would probably be submitted to counsel as subject to great suspicion of one-sidedness and unfairness—a case rather inviting concurrence in a foregone conclusion, than fairly describing doubts and asking for a solution of them.

Incidental to this question there has been a good deal of reference, in anything but complimentary terms to our profession and those bodies—such as our Institute—in which we are associated. They have been called trades-unions, and have been described as organizations for the purpose of overcharging the public. The unfairness of these charges and insinuations must be pardoned for the temptingness of them. In the heat of debate the opportunity of delivering a knock-down blow affords an irresistible temptation; no man can pause and reflect on its unfairness. There are, however, differences between our trades-unions and those of Sheffield among the grinders, and those among our collaborateurs the brick-makers of Manchester. We do not raise our rates of wages when trade is brisk, nor do we blow up, assault, or attack in any way, physically or morally, members of our profession who choose to work cheap. It is true we neither admire nor imitate such irregularities of practice, but we do tolerate them. Our trades-union peculiarities are therefore, so far as regards the rate of compensation for services, merely declaratory, and, as such, are as useful to the public as to ourselves—both they and we have a common standard, easy of application, to appeal to, and by which we are bound. One moment's reflection will show anyone that the public—the employers—are even more benefited by having a distinct, clearly-defined scale to appeal to, and by which to measure the value of services rendered, than we are. I will give you an instance. Not long ago a civil engineer made what were called, by a stretch of courtesy, plans of a building, for which he charged and was paid £70. These were very rude and imperfect sketches, without specification, or such drawings of details as would have been necessary to enable an estimate of the cost to be made by measurement in the ordinary way. The building would have cost, if executed, about £600 at the outside. Now, according to the rules of this our organization for overcharging the public, had one of us furnished these plans (had you seen them you would recognize the wide stretch of imagination necessary to realize even in fancy the possibility of such a thing)—but had they been supplied by a member of this trades-union, he would, according to its rules, have been entitled, when he had completed his work by supplying the additional drawings that were necessary and the specification, to a sum of £15! So much for our organization for overcharging the public. I presume, however, that even our detractors will acknowledge that it is for the interest of the public that architects should be as accomplished as possible in all the arts and knowledge required in the practice of their art, and that it is not undesirable, in the same interest, that they should meet, and by the interchange of ideas and experience, mutually improve each other, and by establishing a healthy tone of public opinion among the members of the profession, keep up a standard of respectability among its professors and practitioners which can be maintained by no other means. We are not singular in having such an organization,—every calling or occupation among us has its union of some sort or other; and, being founded on reason, usage, and custom, we shall take the liberty of maintaining it, in spite of ugly names and angry vituperation.

There is one branch of our professional practice which is in a most unsatisfactory state,—I allude to the measuring and surveying branch—which concerns itself about the preparing of bills of quantities from the plans and specifications, the measuring and valuing work executed, or the computing the value of works not executed. This is a very important matter, and one which is greatly in need of being regulated as to the scale of charges—according to the guiding principle of our organization as a trades union—for the protection of employers, and to a less, but still considerable extent, for the protection of contractors. It is very desirable, and I earnestly invite the attention of the Institute to it, that a scale of charges should be framed and published under the authority of the Institute, such as it is, by which a remuneration would be fixed that should be fairly proportional to the labour and time expended. I would advocate, not one uniform percentage rate, but a rate varying with the quantity and quality of the builder's work done or to be done; so that each employer should be called on to pay in proportion to the value of the services rendered to him. At present there is, I know, a rough approximation to such a system of charging, but it is deficient in every respect, and in fact there is no rule, —or, as I would prefer always to put it, there wants an authoritative declaration of the usage and custom of the profession. There are other defects in the present system—or rather want of it. The independent building surveyor is subject to very great temptations. In common with all the rest of the world, he is liable to err—he perhaps more than usually so, from the business being one of immense detail, and not admitting of any such mechanical means of insuring accuracy as the system of double entry in book-keeping,—for instance, probably no two surveyors, measuring from the same plans and specification and using the same scale of prices, would bring out the same result. In this liability to innocent and hardly-avoidable error, there is an irresistible temptation to protect the contractor—who only has the means of discovering omissions or shortcomings—by taking out all the quantities full, as it is technically called, which, being interpreted, means making the employer pay a little more on all items to guard against the chance of his paying less on some than he ought. Another temptation not without weight occurs in cases of competition; and it is my experience of such cases that the measurer, although paid in the long run by the employer (the public), is generally appointed by and in the first instance paid by the builder; and that his continuing to be employed depends largely on his skill and ability in swelling the builder's bill. In theory he is a sort of arbitrator: in practice he generally is attorney for plaintiff; and, while I would never dream of charging them with purposely increasing quantities or prices with reference to what the amount of their percentage at foot of the account will come to, I do maintain that there is an unwholesome influence exercised by their position at present, which is such that they will lose their clients if they fail to make out big bills. Now the remedy for this state of things appears to me, and I throw out the suggestion with great humility. (I am peculiarly circumstanced, but perhaps that peculiarity may be of some advantage in considering matters such as these.) The remedy I would suggest is that the architect should resume the functions which have by degrees, during the last generation, been gradually devolved on a separate class of practitioners—a distinct branch arisen within the profession. I would recommend that we should become again architects and *surveyors;* that we should ourselves, either personally or by deputy, in our own office, or by employing some other person, but in every form of the case that we should ourselves be the responsible surveyor or measurer. This is very much the custom in England, and is, I believe, all but universal in Scotland. In England, however, I believe there exists a vicious custom of collecting the charges for these services from the builder, who in turn charges the employer. This is a vicious custom which I hope will never be established here, and it is wholly unnecessary. Let the charge made for the work be a fair and reasonable one, in accordance with a scale published by the Royal Institute of the Architects of Ireland, as the fair, usual, and customary charge for such services rendered, and there should be no necessity for disguise about it. Let the charge be made openly and above board to the employer himself, and therefore to his knowledge: not as the English practice seems to be, surreptitiously, anonymously, in disguise as it were, as if there were something to be ashamed of. Such a course is largely for the interest of the employer, and not antagonistic to the proper interests of the builder; and in this respect also, should the suggestion which I have ventured to throw out be acted upon, our trades-union will prove itself to be endowed with the highest of the Christian graces — the charity which does good to its natural enemy —the public.

The most prolific source of suits at law about buildings is the question of quantity and value; whether work is done or not, is a matter of fact and capable of ocular demonstration; whether it is done well or ill, is comparatively rare as a subject of dispute; but quantity and value are the commonest grounds of dispute, and if the ingenuity of the most perverse of human beings were puzzled out to devise the worst sort of tribunal before which to bring such a dispute, none could be devised worse than a British judge and jury. With a judge alone there exists the disqualification arising from technical ignorance, but which is often to a great extent overcome and neutralized by intelligence and good ordinary common sense; but multiply the judge's worst difficulties and disqualifications by twelve, and you have a state of things so monstrous that nothing but the vicious conservatism of mere lawyers has maintained it to the present day. Our common law and trial by jury are themselves on their trial; thinking men are recognising both to be relics of barbarous ages, suitable for a state of society and relations which existed 300 years ago, but which no longer do exist; and we may hope that ere long courts will be established on the principle of deciding cases according to the equity involved in them, and no longer in accordance with arbitrary rules and precedents which have long out-lived the theories on which they were originally based; and it is further to be hoped that arrangements may be made for constituting courts so as that the bench shall not be occupied by a judge sitting alone and unassisted, to whom the technical description of the material facts of the case, expressed of necessity in technical terms, is conveyed, or attempted to be conveyed, in a language as unintelligible as Chinese.

If I am not occupying your time too long, I should wish to say a few words about building contracts and competitions, and our intercourse as architects with builders. I am only saying what is within the knowledge of you all, that building contracts have become a very different sort of thing from what they used to be. They are changed both in form and complexion, and, generally speaking, for the worse. I can remember the time when the ancient style of building was not yet quite exploded, when for every work, at any rate of any importance, each trade formed a separate contract, frequently taken by different men; the person who did the bricklayer and mason's work was a different person from the contractor for the carpentry and joiner's work, who on his part never meddled with plumbing, plastering, painting, &c. In this distribution of the parts of the work among several contractors there certainly arose jealousies and bickering and recriminations frequently if things did not go quite smoothly; each trade was anxious to thrust the blame of delay or failure on to his neighbour's shoulders, and progress was necessarily slower, but there was a compensation in the system for even more serious inconveniences, for each contractor was master, in the strict technical craftsman sense of the word, of his own trade—he had a personal and thorough knowledge of it in all its branches, he had learned it in its first rudiments as an apprentice, and had worked his way to mastership in it; this familiarity begot a feeling of pride in good workmanship, and there was also a sort of rivalry arising from other craftsmen having to follow him in the building to go over and finish his work. Now in our present system a man may become a builder who knows nothing whatever of the craft of building, and if he be prudent and careful in the selection of the person he employs, he may rise to eminence and opulence by it. It is a fact that few of our builders have really learned their business as a whole. They generally know one trade—that to which they were originally apprenticed—well, but of all the others have only acquired a very superficial knowledge. Now to such men the value of work is estimated by what price can be got for it, not by the old scale of prices, based on the cost of materials, and workmanship, and a fair profit added thereto. In such hands workmanship must surely deteriorate. They have not in themselves the same standard of good work as their predecessors had; they are not as good judges of it—they cannot so thoroughly appreciate it, and consequently their chief standard is what will pass the architect's appproval, as to quality, and what can I get it done for? as to price—both which considerations tend inevitably to lower the quality of the work, and to raise a trial of skill between architect and contractor—the one trying in vain to get for his employer what the contract sets forth in such constant iteration—"Thoroughly skilled labour and materials the best of their several kinds," and compelled in many cases to put up with, and give his certificate for, work which he knows well (and the builder knows too is not of the quality that he bargained to get, but which is not so glaringly bad as to enable him to prove to the satisfaction of a judge and twelve jurymen that it is not what was contracted for. The builder's interest is only to make money by a job, and pass on to another; and the system of competitive tenders has tended to induce a sharpness of practice between architect and contractor, which has gone a long way to overturn that feeling of mutual confidence founded on mutual respect which characterized the relation between them in former times, until a modern set of plans and specification is become a mere trial of skill and ingenuity between the parties. I wish I could even hope that such a state of things could be undone again. I wish we could look forward to a time when the architect would select his contractor from his known worth and intelligence, and pay him a fair price for good work actually done. But this is impossible. There is an amount of convenience to the employers in being able to look forward to the completion of their work at a certain fixed sum, that the system of contracts for a lump sum will always prevail—we shall never be able to get rid of it. We must therefore make the most of it by care in the preparation of our plans and specifications, by looking to the character of our builders, and by setting our faces against the acceptance of unduly low tenders. No man can be expected to do work at a loss, if he can avoid it; and if we are pressed with the usual argument that the tender should be accepted, and could be safely accepted if good security be given, it is our duty and our interest to press on the employer the consideration that he will inevitably lose more than the saving of cost in the lessened value of the work, and that a contract, if drawn up with all the ingenuity of man, is only of use with an honest contractor. A man who has nothing to lose will laugh at clauses engrossed on parchment: he is safe in his very impecuniosity. The character of the contracting parties, and the absence of any unfair advantage on either side, are the best and most satisfactory contracts.

I desire to conclude, as I commenced, by an expression of welcome to you at this the first meeting of a new session. Our year of intercourse here opens amid the cold and storms of the closing year, and continues until it has passed into the warmth and brightness of midsummer. May that brightness and happiness prove a type of our progress during this and every succeeding session.

TIMBER-BUILT HOUSES.

In a recent number of the Irish Builder we have given some account of the timber-built houses which formerly existed in Dublin; with this number we are enabled to give an illustration of one taken down about 1812 at the corner of Castle-street and Werburgh-street, which gives a fair idea of their general features, although its construction appears to be of a much plainer character than usual, no carved ornamentation appearing in its details. Many of these houses were richly ornamented with numerous devices rudely, yet elaborately, carved, more particularly the family arms of the founder, and generally with an inscription commemorating the date of their erection, as mentioned in our last paper. Verily, this was the age for carpenters—in the slow process of sash making (of these days), divided as they were into numerous small squares with massive moulded and stopped bars, there was an amount of workmanship in connection with their projecting bay windows which would now puzzle a modern contractor. It will be seen by reference to our illustration that a large portion of both fronts was occupied by these projections, that on the return in Werburgh-street is considerably greater than in Castle-street, and both supported upon massive shaped corbels. An aged friend of ours, who distinctly remembers several of these houses, informs us he had often heard the occupants could shake hands (in many instances) across the street with their neighbours.

It is generally believed that to colonists from Bristol we owe the first introduction of timber-built houses, and that they were afterwards greatly improved upon and finished in a more picturesque style by other colonists from Chester. The name St. Wereburge-street, as it was originally called, was given by them in commemoration of their tutelar saint, and after the church they founded here. The Cathedral Church of Chester is said to occupy the site of a temple of Apollo, erected during the Roman rule of Julius Agricola, which was afterwards converted into an abbey, dedicated to St. Wereburge as its patroness, soon after the Norman conquest, and eventually became the foundation upon which the Cathedral Church of Chester now stands, which is still known as Werburghs Church; and it is curious to remark how one of the latest subsisting examples of this style of building survived upon the site nearest to that consecrated by its originators. We do not intend here to enter upon a disquisition of the origin of these timber-built houses, but it is certainly strange that a city deriving its name from the camp of the Roman Legion —colonized by them—its antiquities, and its original architecture, all growing from the same source, should be the means (where stone existed in the greatest abundance, and where the manufacture of bricks could not be unknown) of introducing and extending a quaint style of building, the direct counterpart of their Roman conquerors, and to whom they owed their civilization. But this may in a measure be accounted for by the Saxon and subsequent Danish invasions. Chester still presents very numerous examples of this description of building; one in particular, called God's Providence House, from the fact of its being the only dwelling altogether exempted from the ravages of the plague in its memorable visitation of that city. Many of them date back to the early part of 1500, and from a recent inspection of some of these antique specimens we are inclined to think, unless removed to make way for modern improvements, they will still outlast many generations to come. The latest existing example of this style we had in Ireland was the house taken down in 1824 at the corner of Laurence-street and Shop-street, Drogheda; its construction was of a more picturesque style than those of the drawings we have seen of Dublin houses; there was a good deal of elaborate carving upon it, and an inscription, which we give below; we also give an illustration of part of the wainscot work which filled the interspaces between and above the openings in a great portion of the front. We are indebted to a publication which we regret to say has long since ceased to exist, and a copy of which is now scarcely to be had for love or money—*The Dublin Penny Journal*—for the following particulars relative to this house, which we give *in extenso*:—

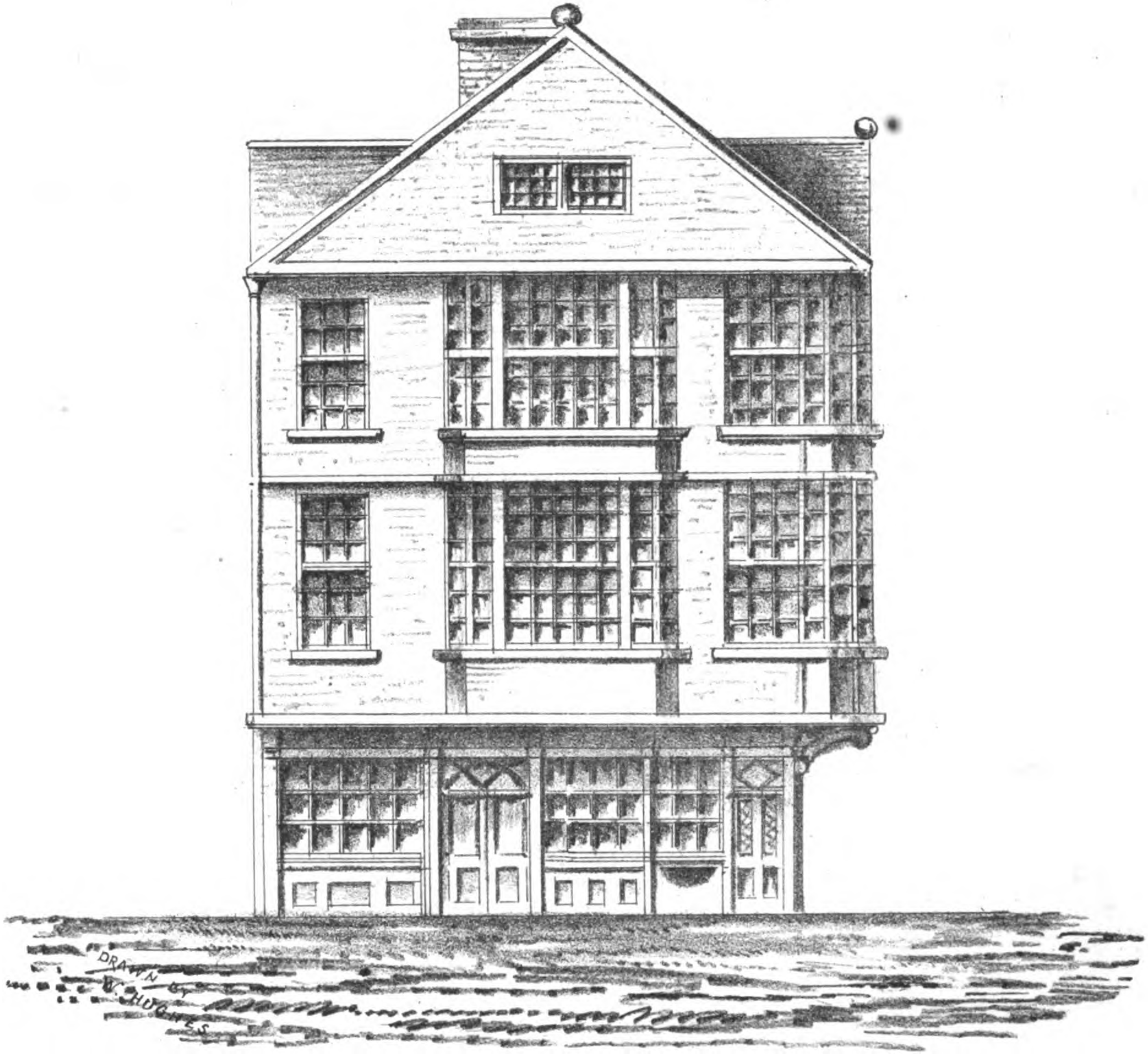
"This building was erected A.D. 1570, by Nicholas Bathe, a member of a family which appears to have had considerable possessions in the County of Meath, Athcarne Castle, a few miles beyond Duleek, being erected by William Bathe, in the year 1590; and it appears by the inscriptions that the carpentry of both buildings was executed by the same person, viz.—Hiv Mor, or Hugh Moore. It occupied the angle formed by the junction of Laurence-street and Shop-street, the principal front being in the latter, and was composed chiefly of oak, said to have been obtained from Mellifont Park. It consisted of three storeys, the upper projecting beyond that immediately beneath; the upper or attic storey was composed of strong square oak framing with spandril pieces, each piece forming a quadrant or segment of a circle, the interstices filled with plaster; the principal or, as we would now say, the drawing-room storey was of a more finished character, consisting of panelling or wainscot, each panel being about a foot square, and fancifully carved in quatrefoils and foliage executed in good style; the rails and styles were also ornamented with projecting pins or trenails. It is difficult to say how the lower storey was arranged, it having undergone many alterations; it was, however, extremely low, and latterly divided into several small shops. In the angle on the drawing-room floor was a handsome semicircular bay window consisting of four divisions, a panel in the pedestal of which contained the arms of Bathe, viz., a cross between four lions rampant, with the initials N. B. This panel was preserved by Peter Van Homreigh, Esq., the late recorder. There was another projecting window in Shop-street, but it did not appear to be of such antiquity as the rest of the building. On the bressummer in Laurence-street was the following inscription, in the antique raised letters used in the time of Queen Elizabeth, each about 6 in. long, and each word divided by a star:—

'MADE ✱ BI ✱ NICHOLAS ✱ BATHE ✱ IN ✱ THE ✱ IEARE OF ✱ OVR ✱ LORD ✱ GOD ✱ 1570 ✱ BI ✱ HIV ✱ MOR CARPENTER.'"

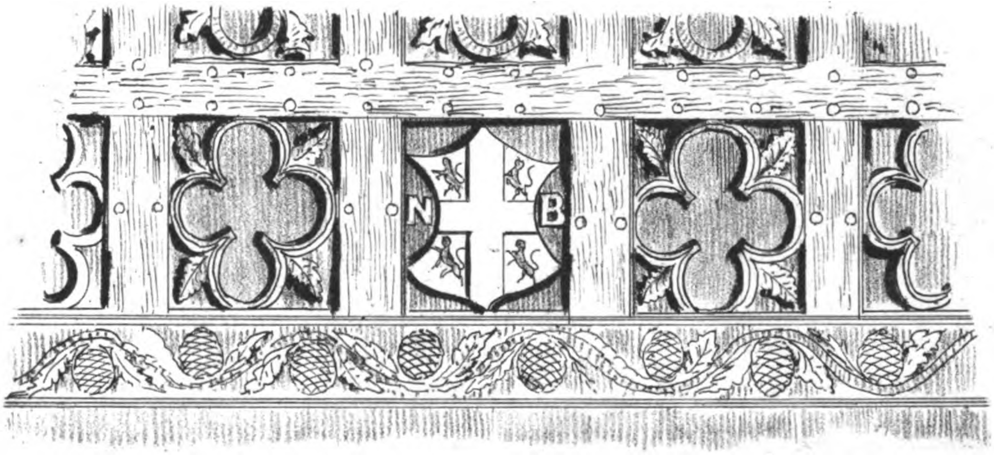
We have said in the commencement of this paper that these were the days for carpenters. The services of architects, if such existed, appear to have been ignored; however, from the details of panelling which we give, there appears to have been more taste evinced than we usually meet now without professional assistance.

The late Daniel O'Connell once said at a repeal meeting convened by the trades, that "when we get a repeal of the Union the carpenters will be up to their necks in shavings." We are inclined to think if he had added, provided we could return to the quaint building fashions of our ancestors, he would have been nearer the mark, as at this period carpentry and joinery appears to have afforded, in comparison to the population, an amount of employment we know nothing of; while the master or employer must have been a person of considerable importance, as assuming the duties of both architect and builder; and, considering the amount of handicraft required in the construction of an ordinary dwelling house, we are only surprised he could find leisure to devote himself to both duties. Hugh Moore certainly developed something akin to architectural taste in the outline of Mr. Bathe's house, and, as constructive building, its principles must have been of high order to endure for a period of 254 years; and it is quite possible, but for the alterations often required in converting the ground storey into shops, and remodelling them to suit the tastes of their respective occupants, it would have remained in good state of preservation till the present day.

The parish of St. George (London) has recently acquired a steam roller of seventeen tons weight, to be used in crushing and hardening road metal. It was at work on Tuesday in Hanover-street, and the ease and rapidity with which it rendered the road smooth and ready for use gratified all lovers of the horse.



SKETCH SHEWING FRONT OF HOUSE
CORNER OF CASTLE ST. AND WERBURGH ST. DUBLIN,
AS IT FORMERLY STOOD.



DETAIL OF PART OF PANELLING IN THE WAINSCOT
OF PART OF HOUSE TAKEN DOWN IN DROCHEDA
A. D. 1824.

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OPENING MEETING OF THE INSTITUTE OF ARCHITECTS.

The opening meeting of the session 1870-71 was held on Thursday evening, the 24th ult.

Mr. James H. Owen, M.A., president, delivered the inaugural address, which will be found on another page.

The honorary secretary read a letter from the American Institute of Architects, conveying resolutions from that body approving of the action taken by Mr. E. M. Barry in the recent law case; and announced that he had also received a communication from Dr. Colles, requesting the co-operation of the Institute in raising funds, &c., for the restoration of the round tower and church of Glendalough.

The honorary secretary then read the

REPORT OF COUNCIL.

"The outgoing council has to report to the Institute of its existence throughout a year marked by unusual depression in the progress of architecture in this kingdom; of an absence of much eventful in its history, yet of a vitality and unanimity in its councils, and even of substantial prosperity and progress, which are matters for congratulation.

The papers read at public meetings, and the attendance upon these occasions, have been below the average of past years, and the council would direct the serious attention of members to their shortcomings in this respect; but at no period have the affairs of the Institute been carried on with more regularity. The attendance at council meetings has been numerous and systematic, and, with what assiduity the members could bestow, all current matters affecting the profession generally, and cases of individual difficulty having a bearing on professional practice, have been carefully discussed and action taken upon them.

Among papers contributed by members may be noted one by Mr. James H. Owen, on "Damp"; one by Mr. William Fogerty, the first portion of "Notes of a Tour in Northern Italy"; and one of very great interest and ability by Sir William R. Wilde, M.R.I.A., read before a numerously-attended meeting of the Institute and the general public, on "The Life and Times of Gabriel Beranger, and his Labours in the cause of Irish Art and Archæology in the last Century."

An opening *conversazione*, at which an address was delivered by the president, Mr. J. H. Owen, was very numerously attended, and the architectural exhibition in connection with it was of a higher character and more worthily representative of the progress of architecture in Ireland, than any which the Institute had been previously able to achieve.

Of public questions affecting the interests of the profession, that which is now well known as the Ayrton *v.* Barry difficulty—a controversy involving the whole question of an architect's right by usage to property in his plans—has occupied prominently the attention of the council, and the co-operation of the Institute with the Royal Institute of British Architects has been hearty and unanimous. The opinions in this case promptly expressed by the council on behalf of the Institute were subsequently endorsed by those of nearly every architectural society in the three kingdoms, and by the Institute of America.

The council cannot refrain from an expression of regret at the present position of this controversy, and that the issue as to the legal recognition of an immemorial usage of the profession should have been so unfortunate as to be raised by an individual member of the profession opposed to all the weight of a powerful Government department, backed by opinions from law officers of the crown on an necessarily *ex-parte* statement of a question already pre-judged by the First Commissioner of Works. More recently still, a decision of her Majesty's judges in one of the superior courts of England, which would tend to create a law at variance with professional practice hitherto, has been promulgated, and it should occupy the deliberations of the council in the ensuing session how this *vexata quæstio* may be disposed of, and a rule of practice adopted at once unequivocal, reasonable, and upholding the interests of the profession.

The recent frequency of actions at law in cases affecting architects and builders, in the Irish courts, has also been a matter of anxious consideration. The code of architectural jurisprudence which may be established by these actions, and which the decisions of her Majesty's judges may create, is a matter the grave importance of which cannot be overestimated. The question of how co-operation with other societies—whether through the medium of the Architectural Alliance or otherwise—may be brought to bear on this subject, is one that should occuy the attention of the council next session.

The sad record of losses by death must almost inevitably conclude a report. In May last died Mr. John Mulvany, a Fellow of this Institute, a member of the Royal Hibernian Academy of Arts, and at one time one of the most extensively employed practitioners in Ireland.

Mr. William Longfield, formerly practising as a civil engineer, and distinguished during a long connection with the Institute for a keen interest in and appreciation of architecture as a science and fine art, died in July last.

A vice-president of the Institute has more recently passed away from a long and active life, full of years and honour, a very patriarch among architects. Mr. Jacob Owen, for very many years architect and principal engineer to Her Majesty's Board of Public Works in Ireland, long regarded as the father of the profession in this country, was born in North Wales in the year 1778; and, in a life of marvellous duration and activity, witnessed the very birth, youth, and, it may be, culminating triumph of civil engineering, revolutions in architectural practice unprecedentedly rapid, and multiplying of builders' appliances and materials—thus learning the practice of his profession in a hard and practical school, in anticipation of text-books and precedents in the light of which we now walk. Jacob Owen brought a practical and vigorous intellect to bear upon the amazing professional events of the earlier half of this century; and, in his public career in this country, commanded respect by his administrative ability and unbending honesty of character. Until a very recent period indeed the Institute enjoyed the benefit of his discreet counsel, his not unfrequent presence, and his ever-warm interest in its affairs and prosperity."

Mr. J. R. Carroll, Fellow, moved, and Dr. Cameron, Hon. Member, seconded, the adoption of the report.

The Vice-President of the College of Surgeons moved, and Mr. F. V. Clarendon, B.A., Fellow, seconded, a resolution that the address be printed and circulated at the expense of the Institute.

Sir William R. Wilde moved, and the Rev. Dr. Farrelly, Bursar of Maynooth College, seconded, the vote of thanks to President.

Sir W. Wilde also remarked, in supporting resolution, that he had enjoyed the acquaintance of Mr. Jacob Owen for many years, and latterly of his son, the worthy chairman; and trusted the reading of the address was listened to with as much attention as he had given it. This was not the first time he had been at their meetings, and he hoped it would not be the last, for he intended giving them another paper during this session. He expressed satisfaction at the financial results of his movement for the preservation of Roscommon Abbey—a sum of £160 having been already subscribed. He had no doubt but that this movement would be an incentive for others with the object of preserving many of our interesting ruins.

The chairman desired to convey a vote of thanks to Mr. John Nolan for the presentation to the Institute of the collection of beautiful photographs of buildings in the city and suburbs which adorned their rooms.

DOCUMENTS IN THE TUILERIES, PARIS.

The Commission for the examination and publication of the documents found at the Tuileries, has entrusted the arrangement of the materials of the 'Vie de César' to M. Soury, an ancient pupil of the Ecole des Chartres, and now engaged at the Bibliothèque Nationale. This *archiviste-paléontologue* has made a report, in which he says that, setting aside the enormous mass of applications for, and thanks, addresses, &c., concerning the book, there remain documents of archæological interest sufficient to make nine or ten volumes; these include dissertations and studies by many of the most eminent philologists and archæologists of Germany, France, and Italy, amounting to about two hundred in number. Amongst the authors are MM. Mommsen, A. W. Zumpt, Lange, Drumann, Ritschl, Dübner, Henzen, De Rossi, Léon Renier, Alfred Maury, and Pietro Rosa, and many more known to science. Amongst the documents is an analysis of the mémoires of Dr. Mommsen on the Romish Tribes, and the question between Julius Cæsar and the Senate, by M. A. Maury. The most important documents are those of M. Léon Renier and M. Alfred Maury, which fill many portfolios; a large portion of these consists of notes and answers to queries by M. Maury, and explanations of epigraphic texts by M. Renier. The topographical notes relating to some Gaulish *oppidum*, to the places of embarkation and disembarkation of Cæsar, to battle-fields, siege-works, Roman camps, &c., are endless; they are the work of almost innumerable hands, including those of a few distinguished men. The dissertations on ancient arms—the *Fronde*, bow, lance, casque, cuirasse, buckler, javlin, pilum, &c., are numerous and valuable, as are the catalogues of Roman and Gallic coins. The reporter recommends the Commission to deposit the documents in the MS. Department of the Bibliothèque Nationale.—*Athenæum*.

CORRESPONDENCE.

[*It is to be distinctly understood that although we give place to letters of correspondents, we do not subscribe* editorially *to the opinions or statements set forth in same.*]

PREVENTION OF ACCIDENTS UPON RAILWAYS.

TO THE EDITOR OF THE IRISH BUILDER.

Sir,—Some of your engineering subscribers no doubt would be enabled to approximate the cost of laying two additional lines of rails from Euston-square to Holyhead, and when this is done let an account be taken of all the expenditure in compensations to passengers, damages to the railway, to engines and carriages, and the amount of annuities (capitalized) payable to relatives of passengers by the London and North Western Railway Company, and see how far the latter would go towards the expense of the former; in addition to this, the probable cost of a few more Abergele, Trent Valley, and Harrow accidents should be added. Now all these were evidently avoidable; they can be easily traced to negligence on the part of those either in charge of the points or of the goods trains, or misfitting or breakage occurring in their couplings. If a railway company of enormous traffic, like the London and North Western, is so culpably negligent both to its own interests and to the public safety, the sooner they should be compelled to adopt so simple a remedy the better; because, if goods trains travel upon separate lines laid exclusively for their use, and upon which no passenger trains should be permitted to run, these heartrending accidents would be impossible, and many valuable lives spared to their sorrowing families. W. H.

ARCHITECTS AND ENGINEERS.[*]

The generalizing tendencies of the present day, the result mainly of the broader analysis of modern science, concur to draw together and assimilate, in many points, pursuits and professions formerly separated by an easily recognized line of demarcation. As we draw nearer, in our researches, to first principles in science and art, we come almost insensibly to find things which we had been accustomed to regard as essentially diverse in their nature, resting, in fact, very much upon a common basis; we discover that knowledge and information which bear specially upon one particular occupation, come in usefully, or even indispensably, in the practice of other pursuits more or less analogous. The primary effect of each discovery is, as we have hinted, to unsettle and confuse the nominal boundaries of professions, a process which is still more accelerated by the rapidity of modern life and the comparatively short time, nowadays, allowed for the accomplishment of an undertaking. "That is best, which lieth nearest" is the principle adopted by the practical man, as well as the artist. The client goes to whomever he thinks will supply him most readily and quickly with what he wants. But the secondary effect of this state of things must necessarily be, in the end, to narrow the circle of individual practice in any art or profession, and to promote the principle of the division of labour.

The distinction between architects and engineers, was formerly sufficiently recognized by every one, and might in broad terms be expressed thus: that the engineer was concerned in providing for transit from one place to another; the architect in erecting buildings at the various termini of locomotion. The older engineers achieved their fame by their canals, their bridges, their roads over impossible places; the architects by their churches, townhalls, and public and private buildings generally. But the advent of that great democratising agent, steam, for a time very much modified all this. In the first place, the discovery of so new and valuable an agent in locomotion naturally drew everybody's attention, much more than formerly, to construction as regarded in connection with locomotion rather than to the class of buildings needed for habitation or display. Railways became an end rather than a means, so that in some cases the natural order of things was reversed, and instead of railways being a means of communication between two towns or cities, the necessity for communication between places of small importance was made the pretext for the construction of railways, projected and surveyed, if not completed. In such a state of affairs the engineering profession of course made a long pull, a strong pull, and a pull all together, alike upon the purse, and the confidence of the public. Then there were in connection with railways, such things as terminal and roadside stations to be built, things bearing the semblance of being strictly architectural works, but which, nevertheless, fell largely into the hands of engineers, as many wonderful structures up and down the country can and do abundantly testify.

We all know every design must have a structural basis, and, therefore, knowledge of construction is necessary to the architect, whatever may be the work he is engaged upon. It is only when the constructive necessities of a building or a structure of any kind completely override in importance its artistic necessities, or when the constructive problem is so difficult as to be itself an object of special study, and of the application of abstruse scientific and mechanical principles directed by a judgment resulting from long practical experience, that the aid of an engineer is really necessary. Architectural design, in a high form, rests upon very subtle and refined principles, not apprehended without considerable study, even by those who have a special talent in that direction; and the very quality of mind which predisposes a man for this class of study is frequently accompanied by an antipathy or even an absolute inability for mathematical and mechanical acquirements. On the other hand it cannot be doubted, not only that the highest engineering talent is very often found totally unaccompanied by what we may term æsthetic perception, but that, as before remarked, the very course of an engineer's education tends to draw his mind solely to the consideration of the mechanical properties of material, without any reference to their capability for beauty of form or finish. Where the constructive and artistic problems are equally balanced and are each important in themselves, a fully satisfactory result can scarcely be obtained but by co-operation.

The difficulty is to obtain this co-operation; mathematical and mechanical knowledge are things that can be defined, and if an architect be deficient in these, his deficiency can easily be shown, but if a man is insensible to the difference between beauty and ugliness, between an artistic and expressive and an inartistic and meaningless structure, what can we say? He is insensible, and there is an end. You cannot demonstrate to him logically, that he has erected a monstrosity; for all that he can see, it looks well and he does not know what more you can wish for. The absurdity is that with all this ignorance of what constitutes the æsthetic in building, the engineer who has not been educated in this direction still seems to possess a lurking idea that something called architecture is needed to give the finishing touch to his work. He supplies this deficiency by the simple imitation of something else which has been done by somebody else at some other period, ancient or modern, and which has no conceivable relation to the matter in hand, and then complacently thinks he has done the architect's work in addition to his own.

The real remedy for this intrusiveness of barbarism upon the sphere of architecture lies with the public. And if the directors of railway, and insurance, and other like companies, could be induced to insist upon the introduction of artistic as well as constructive excellence, there is but little doubt that, in the class of buildings referred to, not only would a much greater degree of beauty be secured, but an absolute saving in money, would result from the more economical use of materials by those, who in designing a structure, know just what is needed and in what quantities it will be required.

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[*] From the *American Builder*.

ENGINEERING CLASS, QUEEN'S COLLEGE, BELFAST.

In the course of his introductory address at opening of new session, Professor James Thomson, LL.D., stated that—The engineering course, as a whole, has been mainly arranged with a view of making it suitable for students intending to enter on the profession of civil engineering. The same preparatory studies and training, however, which are desirable for civil engineering are also highly useful for many other walks in life. For the civil engineer, the scientific studies primarily essential comprise mathematics, natural philosophy, and chemistry; but while these are all of high value to him, they are also valuable to the mechanical engineer, the military engineer, the telegraph engineer, the architect, the ship-builder, the flax-spinner, the linen-bleacher, and to the sugar-producer and manufacturer, and I might readily extend the list almost indefinitely. Among the subjects not specially engineering which are comprised in the course, there are geology and modern languages—subjects which conduce to a good liberal education in any path of life whatever. All the subjects which I have as yet named are studied by the engineering students, in common with the students in other departments in the college.

Next, as regards the courses taught by myself, as professor of civil engineering, it will be found that even in them there is but little labour imposed on the diligent student which is not of a kind adapted to extend his qualifications, both in knowledge and in skill, for many kinds of practical business besides civil engineering. These subjects may be thus sketched out:—

1. Geometrical drawing, including the general principles of the accurate representation, on flat surfaces, of the forms and dimensions of solid objects, and including the art of perspective; together with practical drawing, especially in relation to engineering and architectural subjects.

2. Surveying, levelling, and mensuration, including various operations of measuring over the surface of land; and mapping, drawing, and calculating within doors, in connexion with such measurements.

3. A variety of lessons adapted to afford an introduction to many of the chief subjects of study which are liable to be wanted by the civil or mechanical engineer, and by the architect, and by many other classes of artificers and practical men. Of these it may suffice to mention—hydraulics, strength and elasticity of materials, bridges of various kinds, ornamental architecture, and subjects more particularly relating to mechanical engineering.

Now, out of the whole special teaching for engineering students, I may repeat that there is little if anything required to be studied or laboured at which may not be attended to with advantage by many besides those who may eventually select civil engineering as a profession. An acquaintance with such subjects as perspective, and as ornamental architecture, ancient and mediæval, while important to the architect and the engineer, cannot fail to be both useful and interesting to any whose tastes lead them at all towards the cultivation of the fine arts.

The Greek and Latin languages are not included in the course required of engineering students. This is from no want of appreciation of the value of such studies; but it is simply on the old principle that no man can attempt to grapple with all branches of knowledge, and that some which might be very desirable must be omitted for want of time. "*Non omnia possumus omnes.*"—We cannot do all things. Literary studies, however, are not entirely omitted from the requirements of the university in the case of engineering students, as one modern foreign language, at least, is made essential.

It will be perceived, then, that the engineering course has much in common with the courses of students in other departments in this college. It differs from the course of many of the arts' students, mainly in the omission of Greek and Latin, and in the introduction of courses of professional teaching; but only a small part of it can be looked on as being specially technical.

I have been led to make these observations in consequence of the present dulness of civil engineering business. This depression may continue for some time, but it cannot be permanent. The business of civil engineering has always been subject to fluctuations, having had periods of depression alternating with periods of great activity. You may take encouragement, however, from the consideration that assuredly a vast amount of civil engineering work remains to be done in the world by the present generation of youthful aspirants to the profession. Still I have wished to show that the courses of instruction provided in the engineering department in the Queen's Colleges are eminently suited as preparation for numerous other paths of life more or less directly connected with the constructive arts; and I have wished to suggest that, in various directions, good positions will be likely to be open for those who, with diligence and ability, may have prosecuted the studies and carried out the practical work of a collegiate engineering course.

MASONS' STRIKE IN EDINBURGH.

The strike in the building trade in Edinburgh and Leith still continues, and from the aspect of affairs at present, as between employers and men, it seems likely to last for some time. There are upwards of 400 men out on strike in Edinburgh, and 100 in Leith

—the cause being that the master masons have reduced the standard rate of pay from 6½d. to 6d. per hour. Two builders in Edinburgh who have pressing contracts on hand gave in on Tuesday to the demands of the men, and took them back at the old rate of 6½d. per hour, and it is just possible that a compromise may be made by other employers who will offer the rate of 6¼d. per hour. It is generally understood that had the reduction originally proposed been only ¼d. per hour, the Masons' Association would not have made any strenuous opposition to it, as trade is at present dull, and broken weather has set in. Even yet we believe the men are willing to submit their case to arbitration. The operatives' society is, however, reported to be very strong just now—the number on the roll throughout Scotland being 8,000—of which number there are nearly 1,500 in Edinburgh. The members subscribe 3d. per week, and it is said that the funds in hand amount to £6,000. With this sum at their back, and with the support of the whole society, the Edinburgh operatives believe that they will compel the masters to accede to their terms. Each operative on strike receives 10s. per week; and in 1861, when the Edinburgh masons struck on the nine hours' movement, they held out for three months, and gained their point, at a cost of between £5,000 and £6,000. A number of the masons recently employed in Edinburgh have left the city to seek employment elsewhere rather than submit to the reduction proposed by the masters. We believe that a meeting of masters and men on strike was held on Saturday evening, in order to see whether, if possible, a settlement of the dispute could not be effected. Nothing, however, came of the interview; but arrangements were made to hold another conference some time this week, and discuss the question at issue.—*Scotsman.*

PROVINCIAL ITEMS.

Coleraine.—If the erection of new buildings, immense warehouses, and handsome shops be a proof of a community's prosperity, we (*Chronicle*) have no hesitation in stating that the people of Coleraine are in an exceptionally prosperous position. In the course of the past twelve months more new houses of various kinds, and for a variety of purposes, have been erected in the town than perhaps for a like period during the past ten years. An entirely new street of comfortable two-storey dwelling-houses, the property of working men, occupies the north side of the Circular-road, which will now be one of the leading thoroughfares in that district. New villas are being added to those which already grace the Milburne-road; and a block of new houses has been erected by another working man in Brook-street. It is, however, in business premises of large dimension, handsome exterior, and admirable arrangement that we note the most assuring signs of the increasing trade and enterprise of our merchants. . . . . . Amongst the last relics of that state of matters which rendered a past generation of merchants in the "Diamond" dependent upon the "Governors of the New Plantation in Ulster" for "frame" houses constructed in London, and sent over here to be put together and "filled in"—relics of which there are still two standing—were those upon the sites of which have recently been erected four of the finest houses in the square.

Newry.—The Town Commissioners of Newry have given notice that they will make application to next session of Parliament for an Act to confer upon them certain powers for the improvement of their town. The Act to be sought for is a very comprehensive one, and embraces:—the incorporation of the Town Commissioners, and the transfer to them of certain of the powers at present exercised by the Grand Juries of the two counties in which the Borough of Newry is situated; the purchase of the existing gas and water works; the abolition of the fairs and markets at present held in the town, and the establishment of others with proper accommodation; to erect a town-hall, as well as dwelling-houses for the labouring classes; the providing of baths and wash-houses, and slaughter-houses; to supply the town with water from new works connected with Camlough lake; the covering in of the tidal river which flows through the town and the appropriation of the slob lands, for the purpose of erecting market-houses and the holding of fairs; the purchase of ground for a public park in a convenient locality. It is not supposed there will be opposition to any of the clauses in the Bill, with the exception of those relating to the water scheme, which are almost certain to be contested when the Bill is in committee.

Drogheda.—The local *Conservative* publishes a lengthened report of the proceedings of the Drogheda Corporation at a recent meeting. Abuse *ad libitum* is heaped day by day during the present wet weather upon the worthy civic officers of "dear, dirty Dublin," but it may perhaps console those respectable gentlemen to hear that others in similar posts of honour (?) come in for what in most instances is so richly deserved by them. We print an extract from our contemporary's report:—

Mayor—I have to acquaint you that a very serious mistake has been made in the contract for sweeping and cleansing the thoroughfares within the borough. Several lanes and streets have been, it appears, left out of the contract altogether! This omission occurs not alone in the present contract, but with contracts for years past! Whether it is the fault of your officers who should have looked to this matter——

Mr. Leech—Too many are spoiling the business.

Mayor—There is Chester's-lane, and the place that runs across Patrick-street, left out, amongst others. When I called attention to the filthy condition of some of these places, with a view of having the contractor cleanse them, I was told that they were not in the contract at all, and never were in the contract. The filthy condition of these places is notorious.

Mr. Leech—The whole thing is so well done, there is no use in quarrelling about these places.

Mr. Cullen—I thought the contract includes all thoroughfares within the borough?

Mayor—It appears it does not.

Mr. Knaggs—O, it only shows how the Corporation are doing their business!!

Mr. Gormley—There are twenty lanes that I and some others went to inspect some time since, where the inhabitants told me that Monaghan and his men were never seen in.

Mayor—Are we to have another order to have these places cleansed?

Mr. Mathews—I think you have orders enough, and expensive ones, too. What I suggest is, that we get a list of those thoroughfares included in the contract and of those that are not, and then give a contract. You don't know what you are doing until you get a proper list.

Mr. Carney mentioned a number of lanes and byeways in which the broom of the scavenger, under this admirable contract, never disturbs the filth.

Mr. Whitworth called attention to the notorious fact that the footways in some localities within the borough are kept in such a state of surpassing filth that people, as a matter of choice between two dirty evils, prefer to walk in the dirt of the street rather than wade through that on the footway.

Mr. Mathews—You have Mr. Cogan, and Mr. Butterly, and Mr. Carney——

Mr. Leech—And Mr. Dodd (laughter).

Mr. Mathews—I wish to goodness you had half a good one that would be worth the whole of them; you will not have a penny of the corporate estate by-and-by.

Belfast.—A parliamentary notice indicates that Belfast, although it has made unprecedented progress during the last forty years, continues to do so still. *Vires acquirit eundo.* It had perpetuity leases as a fulcrum for its lever, and it made a good use of them. In 1830, Belfast (we quote from the *Newry Telegraph*) had a population of 50,000; now it has more than trebled that number. Its winding channel and filthy old docks have given place to a straight and deep entrance for vessels, and a magnificent harbour. A solitary spinning mill has been followed by numbers of similar mills. Churches connected with several denominations have risen one after another with graceful architecture. David Manson, a private schoolmaster in Belfast, did good at a former period by the publication of a spelling-book and small dictionary, but education had its greater successive triumphs in the old Academy, founded in 1780, the Academical Institution, opened in 1814, and ultimately in the Queen's College. Large and beautiful streets have increased. Trade and commerce have expanded, and have their corresponding structures. Inroads have been made upon the country around, and palatial residences have arisen in all directions. A town expanded into a great city brought with it corresponding duties. The Belfast Corporation has not been unequal to its important position. The notice we refer to is connected with attention to the sanitary state of the town in several respects. Close and filthy courts are to be stopped up, the long-standing nuisance of an abominable and poison-dealing river to be diverted, sewers to be constructed for the main drainage of the borough, and the sewage utilised. These are most important works, and must, when completed, be highly conducive to the health of the inhabitants. Hudson's Entry is one of the narrow places proposed to be closed. We imagined this had been done long ago. No less than four bridges over the stygian Blackstaff are to be rebuilt or improved. We do not profess to be skilled in engineering, but if the Belfast Corporation were to cover it all over with a continuous bridge (as is proposed to be done, in order to manufacture land, with the Newry tidal river) it would be one method of concealing its filth, and confining its noxious effluvia. Attention to the main drainage is an important matter, and the utilisation of the sewage of no less importance. In all towns of considerable size, much sewage is wasted, which might be a source of wealth to them, and a valuable fructifying agent in the country. The Bill to be applied for is also connected with the further extension of the borough, as it will put it in possession of lands, which will furnish additional sites for building. The Belfast Corporation deserves credit for the example it sets to other towns by its attention to matters so intimately connected with the health of the inhabitants.

LAW.

AN ARCHITECT'S RIGHT TO RETAIN HIS PLANS.

Ebdy v. *M'Gowan*.—This case, which raised the question of an architect's right to retain plans as against his employer, came before the Court of Exchequer, London, again on Wednesday. The trial took place before the Lord Chief Baron, at Guildhall, when a verdict was returned for the plaintiff—damages £106 13s. 11d. During the present term Mr. Aspinall, Q.C., on the part of the defendant, in pursuance of leave reserved by the learned judge, moved for and obtained a rule to reduce the damages by £97 12s., the charge for the vicarage, and it now came on for argument. Mr. Digby Seymour, Q.C., and Mr. Bruce, showed cause against the rule, and Mr. Aspinall and Mr. Edge supported it. At the trial it appeared that some dispute arose between the parties as to the terms of payment, and that the defendant refused to pay unless the plaintiff gave him the plans and specifications of the vicarage. This the plaintiff refused to do, on the ground that it would be contrary to the rules of the profession. The secretary of the Royal Institute of British Architects, Mr. Seddon, deposed that it was the custom among architects to keep the plans, whether the works were executed or abandoned, and that they always viewed them as their own property; and Mr. Fogerty, architect, gave corroborative testimony. On the other hand, the defendant called Mr. Smirke, who said that when the works were completed, it was the practice of architects to retain the plans. Upon being asked what was the practice in a case like this, where the building was not constructed, and the architect was paid 2½ or 3 per cent., he said his had been to offer his client the plans, not as a matter of courtesy, but because he thought he had a right to them, observing that if it were otherwise there would be no *quid pro quo*. The Lord Chief Baron, however, withdrew the question of custom from the jury, and left it to this court, who were to be allowed to draw inferences from the facts proved.

Mr. Seymour said—It must be assumed from the verdict that the jury had found the custom in his favour, and urged its importance on the ground that if an architect could not retain his plans, they might be placed in the hands of a rival or incompetent person, who might spoil his design, and bring discredit upon his reputation. With respect to the argument that the employer got no return for his money if the plans were withheld, he replied that he had the benefit of the architect's thought, study, and skill in preparing them. and that if he choose not to carry them out it was his own fault. Again, if the plaintiff gave up his plans, another architect might be employed to erect the building, and he, instead of the plaintiff, would get the additional percentage,

Mr. Baron Bramwell—Supposing the architect dies, can his executors keep the plans, and yet demand payment for them? Mr. Seymour said Mr. Ayrton, the First Commissioner of Works, had claimed the plans of the Houses of Parliament by Sir Charles Barry from his son, but the demand was objected to.

Mr. Baron Bramwell—That case proves nothing, because at present we don't know who is in the right. Mr. Seymour admitted there was no evidence to show that executors would be entitled to retain the plans, but relied on the universal custom, which he contended should prevail unless it was an unreasonable one.

Mr. Baron Bramwell—Let an architect say he intends to keeps his plans in any case, and his employer will know how to act.

Mr. Seymour—I contend that, taking into account the custom, that is what my client really did say.

Mr. Baron Bramwell—Any man in his senses, on being apprised of that beforehand, would either say he would have nothing to do with the architect, or expect to pay a much smaller sum.

Mr. Seymour—He would get no architect to act for him.

Mr. Baron Bramwell—He would get plenty, and if not let him do without one.

Mr. Seymour—He would get no architect who was governed by the rules of his profession. It is the interest of the public that a man should have the superintendence of the work he designs, and a contrary course would give rise to great practical inconvenience, and indeed sap at the root of the profession.

The Lord Chief Baron instanced the case of an attorney whose bill of costs had been paid, in a suit which had come to an end, and observed it would be absurd to say that he could insist on retaining the briefs and other papers when demanded by his client. On the question of inconvenience, he thought the argument was in favour of the employer, because, in the event of making repairs or alterations, without the plans could he know the direction of the flues and drains or other matters necessary to be known?

After some further discussion upon the case,

The Lord Chief Baron, in giving judgment, said they had to determine whether it was part of the contract, to be implied from the evidence and the nature of the case, that in the event of the employment being stopped by the act of the defendant before the whole performance of the contract, the plaintiff should be entitled to retain the plans. The plaintiff had given evidence of the custom, and he was entitled to incorporate it in his contract. On the other hand, Mr. Smirke, a gentleman of great experience and ability, said he should give up the plans when they were asked for; but his evidence on the point was somewhat loose and unsatisfactory, and the plaintiff and two other gentlemen said positively that the custom was, even when a building had not being commenced, for the architect to keep the plans. That being so, he confessed he was not prepared to pronounce an opinion upon the matter; but that was unecessary. inasmuch as the question was, supposing the custom existed, whether it was a reasonable custom. He was clearly of opinion that it was an unreasonable custom, and could not be imported into a contract except by express stipulation. No such right existed, and it was contrary to good sense and justice. If an architect could retain his plans, which involved, for example, an estimate of £10,000, his employer would have to pay 3 per cent. on that, or £300, and get nothing in return—that was to say, in a case in which the building was never commenced. He paid that for nothing, or for services which were perfectly useless to him. He therefore thought the defendant was justified in refusing to pay until the plans and specifications were delivered over to him.

Mr. Baron Bramwell, in concurring, said he did not think the case was an important one as governing the future, because people could make their own bargains with respect to the possession of plans. An architect might say, "You retain me on the terms that I keep the plans; and though you get no benefit from what I have done, still you shall pay me." But I do not think it is very likely that such agreements will be made. He desired to speak with all respect of a profession which embraced within it so many distinguished men, who were a credit to the country; and he believed they would not put forth anything which they believed to be unreasonable or unjust; but in his judgment the usage now set up was impossible and perfectly suicidal. It only need be stated to show it did not exist. It no sooner came into existence than it cut its own throat by its absurdity. The only way to meet a profession which set up an usage of this kind was to call a large body of the public into the witness-box, and ask them what they thought of it. Where the building had been completed and the employer had paid the architect his 5 per cent. he had derived the principal part of the benefit of his work; and whether the architect ought in that case to deliver up his plans was another question. He did not wish to conclude that question; but he would make this observation with regard to it—that if the employer was entitled to the plans when the employment stopped midway it was rather strong to say he was not entitled to them afterwards. All the convenience of the thing was in favour of giving over the plans. It would be a great convenience to an employer to know how his house was built in parts which could not be seen from the exterior, such as drains and flues, and it was important, therefore, that he should have the plans. As to a man's reputation being injured by his plans being confided to incompetent hands, he thought that was a futile argument, observing that the probabilities were the other way, and that people were not in the habit of making bargains on the footing that something unusual or abnormal would take place.

Mr. Baron Pigott agreed that the contract contended for was not only absurd and ridiculous, but actually impossible. The rule was then made absolute to reduce the damages by £60, and by a further sum of £21.

COURT OF QUEEN'S BENCH.

In Re *the Quay Roads Presentment*.—In giving judgment in this matter, the Lord Chief Justice observed that the court had very carefully considered the question—the presentment of £5,460 7s. 10d.—for repairing, paving, and maintaining the roads upon the north, south, and east walls bounding or near the River Liffey, which was sought to be upheld under 32 & 33 Vic., cap. 100, of the Port and Docks Act. What were the special provisions of the act? After dealing with docks, ballast stores, wharfs, &c., there suddenly appeared a section—the 244th—which enacted that "the Municipal Council should from time to time cause to be presented and raised upon the county of the city at large, in the manner prescribed by law for the time being, the sums of money sufficient for repairing the roads upon the north, south, and east walls bounding or near the River Liffey." That was a taxing section and he must say it appeared to him to have been smuggled into an act where no person expected to find it, in order to accommodate the municipal body, and enable that body to effect indirectly what very possibly it was afraid that the Legislature would not grant, if asked openly. In the course of the arguments an interesting question had been raised—"What is the county of the city at large?" which, he confessed, it was very difficult to ascertain, having regard to the changes carried out in various successive statutes. To him it seemed as if the county of the city of Dublin had vanished under the operations of the gentlemen who inflicted upon them the 32 & 33 Vic., cap. 100; but whether that was so or not, did not affect his decision, which he based upon other ground. The case against the presentment had been ably and clearly argued by Mr. J. O. Byrne, and to him it appeared impossible to get over the objections that the presentment was irregular in the manner in which it had been brought forward, and also illegal in what it sought to do. Under the "Dublin Improvement Act, 1849," a rate of 2s. in the pound was imposed upon the city for paving, cleansing, and lighting. If that rate were not sufficient, it would be quite proper for the Corpoation to ask for an additional rate; but what was the fact? That a portion of the improvement rate, alleged to be insufficient for its proper purposes, was lent to a committee for sewer purposes. Now, that was a clear violation of duty. He did not for a moment impute that there was anything morally wrong in such a transaction: but it was a manifest departure from the powers imparted by the Act of Parliament, which distinctly prescribed that the improvement rate should be applied exclusively to paving, cleansing, and lighting purposes. They (the court) could not say that the 244th section of the "Port and Docks Act" was to be resorted to for raising money for the very object that the improvement rate should have been applied to but was not, and he therefore thought that Mr. French, who had brought the matter before the court, had acted very properly. They were unanimously of opinion that the presentment in question should not be fiated.

Mr. Justice O'Brien remarked that he rested his judgemnt mainly on the ground that it was not shown that the improvement rate was insufficient for its proper purposes. He had no doubt that the Corporation were wholly free from any charge of misappropriation. That body seemed to him to act with economy and with due regard to the interests of the citizens, but it was a very irregular proceeding to lend the improvement fund for sewer purposes, which he supposed must have been done in ignorance of the law. In stating that it was impossible to sanction the presentment he observed that Mr. Byrne had with great industry argued his view of the case.

Mr. Justice Fitzgerald deemed it wiser, in concurring with the decision of the court, not to impute any motive for introducing a particular clause into the Act of Parliament where the information was absent that would enable a correct opinion to be formed. The court having the 244th section before it had to deal with it just as with any other section. He believed it was to avoid the expense of borrowing money that the portions of the improvement fund were lent for seven years; but the act was an illegal appropriation, and he founded his judgment on the fact that until the primary fund—the Dublin improvement—was exhausted, the 244th section of the 32 & 33 Vic., cap. 100, could not be resorted to. That fund clearly was not exhausted, for portions of it had been lent. The matter appeared to have never been investigated in the Town Council, the proper place for considering it. The court, exercising a proper judicial discretion, could not sanction the presentment.

Mr. Justice George also concurred in the judgment of the court.

At the Southern Divisional Court on Friday, Mr. Henry Bussell, 7, Westmoreland-street; Mr. Joseph Wright, 33, Westmoreland-street; and Mr. Thomas Austin, Mr. W. Bolton, and others, all of Westmoreland-street, appeared on summons for neglecting to keep the footway before their premises clean on Sunday, the 13th ult. The prosecutor, police-constable 80 B, was absent, and the cases were about to be dismissed, when Mr. Austin protested against the hardship of being called so frequently upon those summonses, and remarked that, during an occupancy of twelve years, he had never received any intimation that he would be required to keep the footway swept on Sunday. In London the day was a *dies non*, and no streets were required to be swept except the parts before publicans' and vintners' houses. The majority of the establishments in Westmoreland-street were entirely unoccupied on Sundays, as the owners resided in the country. Mr. Wright spoke in similar terms, and added that the day in question was so fine that in any case there was no necessity for sweeping the flags. The fact was, however, the dirty state of the pathway was always due to the filthy condition of the roadways. It was the Corporation who ought to have been summoned, and not the traders, for so long as the streets were allowed to remain as they were every house would want to have a sweeper all day before the door. Mr. Barton concurred in the opinion that the Corporation neglected their duty in not keeping the streets in a proper state of cleanliness, and if they were brought up before him he should deal with them as with any other person. In the absence of witness in the present cases he should dismiss the summonses, but should state, at the same time, that the responsibility of the defendants to keep the pathway clean before their doors existed on Sundays as much as on every day during the week.

[It is reported that "a *Sub-committee of Committee No. 1 of the Dublin Corporation* met on Friday *at one o'clock, p.m.*, Councillor Byrne in the chair. There were also present—Councillors Callow and Dockrell. The sub-committee, appointed on the 5th, on Councillor Dockrell's motion, were engaged in considering the report of the engineer as to an improved system of scavenging!!! The committee *passed several resolutions*, recommending alterations, for the adoption of the General Committee, *and rose at two o'clock p.m.*"]

NOTES OF WORKS.

The necessary steps are in progress for the rebuilding of St. John's Bridge, Kilkenny, from plans by Mr. Peter Burtchaell, County and City Surveyor. The expense to be about £4,000, which will be levied off the county and city.

The Presbyterian church, Palace-street, Drogheda, which had been closed for several months whilst undergoing alterations, was reopened on Sunday week. Mr. Reilly, William-street, Drogheda, was the contractor.

WATER SUPPLY OF PAISLEY.

At the second sessional meeting of the Institution of Civil Engineers, London, Mr. C. B. Vignoles, F.R.S., in the chair, the paper read was "On the Water Supply of the Town of Paisley," by Mr. Alex. Leslie, Asso. Inst. C.E.

"In the year 1835 parliamentary power was obtained to bring in water, for the supply of Paisley, from the districts of Gleniffer and Harelaw, lying to the south of the town, having respectively drainage areas of 624 acres and of 166 acres. The works were executed under the direction of the late Mr. R. Thom, M. Inst. C.E., who made careful experiments, extending over a period of three years, to ascertain the amount of water flowing from the Gleniffer district, by means of which the quantity actually available was found to be 70,354,769 cubic feet per annum, which was equivalent to 31·06 in. out of a depth of 46·13 in. of rain, over an area of 27,189,063 superficial feet. Of this quantity Mr. Thom awarded one-fourth as compensation to bleach fields.

The works consisted of a reservoir at Harelaw, capable of holding 14,248,000 cubic feet of water, with a conduit leading from thence to Stanely, where there were two reservoirs, one to act as a subsiding pond, the other for holding clear water, with regulating sluices for turning the water into either. The open conduit between Harelaw and Stanely was the principal feeder for the Stanely reservoirs; in its course it intercepted the burns flowing from Gleniffer braes, which was almost all pasture ground. The store reservoir was capable of holding 28,340,000 cubic feet, and the clear water basin 7,194,000 cubic feet. These works provided a supply of 22½ gallons per head for a population of 50,000. In 1855 the works were transferred from the company to the Town Council, and the claims were settled by arbitration at 6¾ per cent. on capital.

In 1858 new powers were obtained to bring in the water of the Rowbank burn, with a drainage area of 1,220 acres. These powers were however allowed to lapse, and another nearly similar Act was obtained in 1866, under which the present works had been constructed.

Gauges were erected on four streams, and two rain gauges were placed at different levels, to test the amount of water flowing off the drainage area in proportion to the rainfall. The quantity of rain falling on 700 acres, the depth being 64·39 in., was equal to 163,614, 990 cubic feet, and on 350 acres, the depth of rain being 50·79 in., 64,528,695 cubic feet. The average depth of rain over the whole area was 59·86 in., or 228,143,685 cubic feet, and subtracting the amount measured by the weirs, 179,662,325 cubic feet, there remained for loss by evaporation, &c., 48,481,360 cubic feet, which was equal to 12·72 in. of the rainfall, leaving 51·67 in. available for the high ground, and 38·70 in. for the low ground. There now remained 170 acres with a rainfall of 38·07 inches to be added, which yielded 23,492,997 cubic feet of water per annum, raising the total to 203,155,322 cubic feet per annum.

The pipes were constructed to carry 184 cubic feet per minute, and the compensation water was fixed by the Act of 1866 at 92 cubic feet per minute. Storage was provided for 180 days, or for about 77,000,000 cubic feet. A conduit 6¼ miles long conducted the water to the Stanely filters, whence it was conveyed to Paisley by a 16-inch pipe. A branch pipe left the main 3 miles west of Paisley to supply the towns of Johnstone and Elderslie, and a set of filters and a tank were constructed at Craigenfeoch for filtering the water supplied to those places. Another set of filters and a tank were placed on the high ground to the south of the original reservoirs of Stanely, with a branch pipe leading down to them, to make up any deficiency that might occur in the old works.

The store reservoir erected to impound 77,000,000 cubic feet of water required three embankments, of which the largest was 60 ft. deep and 500 ft. in length along the top, with slopes of 3 to 1 on the inside, and of 2½ to 1 on the outside. The puddle wall was 8 ft. broad at the top, and increased with a batter of 1 in 8 on each side down to the surface of the ground, from which point it diminished to one-half that width, the greatest depth being 62 ft. The other two embankments were respectively 230 ft. long and 14 ft. deep, and 815 ft. long and 18 ft. deep. The first operation consisted in the formation of a bye-wash channel, to carry the water of the Reivoch burn during the construction of the large bank, as it was from this burn that floods were apprehended, and it now served for conveying impure water on their occurrence. When this was finished, the outlet tunnel was proceeded with, the purpose of which was in the first place to discharge the water which would have accumulated during the construction of the bank, and to receive the two outlet pipes, one of which carried the compensation water and the other the water for the town. The tunnel was 426 ft. long, and the interior dimensions were 5 ft. 6 in. by 5 ft. 6 in. It had vertical side walls and a semi-circular roof. The whole length of the arch was 15 in. thick, of moulded bricks set in cement, with an arch of rubble stone set in mortar over it. At the lower end of the tunnel there was a sluice-house, 10 ft. square, with an arched roof, while at the inner end of the tunnel there was a horseshoe-shaped recess of masonry, in which was placed an iron upstand, or sluice shaft. This recess was 10 ft. 9 in. long by 5 ft. 9 in. broad, with walls 2 ft. 6 in. thick. The upper end of the tunnel, for a length of 17 ft., was filled with solid masonry round the outlet pipes, and provision was made in the contract for filling the tunnel with clay round the outside of the pipes, but this had not been necessary. The waste weir was excavated in the solid rock at the south end of the large bank, and wss 40 ft. long, being at the rate of 1 ft. in length for every 30 acres of drainage area.

It was originally intended to strip the entire surface of the inside of the reservoir, as vegetable matter was formerly considered objectionable, but the cost of this led the commissioners to dispense with it.

The sluice upstand, in the horseshoe recess, was of cast iron 2 ft. 6 in. in diameter in the inside, and 35 ft. high, the metal being ¾ of an inch in thickness. It had four sluices at different levels, each being 17 in. square, and fitted with double brass faces. The compensation water was discharged through a separate pipe, with an independent sluice, and the water for the town was conveyed into a cast-iron well, which was constructed with an overflow to take the pressure off the clay pipes, which led from it towards Paisley. The total length of the pipe track from the reservoir to Stanely was 11,126 yards, of which part was of iron pipes, part of clay pipes, and part of masonry aqueducts, the pipes varying in diameter from 16 in. to 21 in. The trench was excavated 1 ft. wider at the bottom than the exterior diameter of the pipe, and opposite each faucet there was a clear space of 6 in. all round, to permit of the proper jointing of the pipes. The clay pipes were jointed with rope yarn and cement; while the iron pipes, which were for the most part turned and bored, were put together with thin cement. Where clay pipes were used in cuttings above 9 ft. deep, a relieving arch of rough rubble was formed over them, which served thoroughly to protect them from crushing. Where the depth of the cutting exceeded 12 ft., a masonry aqueduct was substituted for the clay pipes, the sectional area of which was 3 ft. by 2 ft.

The filters constructed at Craigenfeoch for Johnstone and Elderslie were two in number, each 45 ft. by 82 ft., and the tank was 50 ft. by 26 ft. and 13 ft. deep. The retaining walls were brought up with a void of 4 in. in the heart, with two dovetailed recesses to form a tie opposite each other, 12 in. by 6 in. by 6 in. deep, for every square yard of surface. These voids were filled with clean gravel in layers of 6 in., and each layer was grouted with Portland cement. This formed an excellent water-tight wall, the only objection being the cost, which amounted to between 40s. and 50s. a cubic yard. There were two semicircular wells at the outlet of the filters, with sluices to regulate the head of water over the filters during filtration. The filters had each a 12-in. clay pipe along the centre, with 4-in. branch pipes open jointed. The filtering material consisted of 2 ft. of coarse gravel, 6 in. of small gravel, 6 in. of slate chippings or shells, 6 in. of coarse sand, and lastly 18 in. of fine sand. The high level filters and tank erected at Stanely were of the following dimensions: three filter beds each 90 ft. by 60 ft., and a tank 138 ft. by 38 ft. and 14 ft. deep, constructed on the same principle as the others.

The engineer for the works was Mr. James Leslie, M. Inst. C.E. The total cost of the scheme, including purchase of land, way leave, parliamentary and engineering expenses, amounted to £70,000."

THE ROYAL IRISH ACADEMY.

The inaugural meeting of the Royal Irish Academy for the session was held at their house, 19, Dawson-street, on the evening of the 14th ult.,

The Rev. Professor Jellett in the chair.

The Rev. Maxwell Close read a paper on "M. Delaunay's Views relative to the Condition of the Interior of the Earth." He argued that M. Delaunay's suggestions would be of no assistance to geologists, who should seek elsewhere for support for the theory that the earth consisted of a thin crust containing a fluid.

The paper was referred to the council for publication.

Samuel Ferguson, Esq., LL.D., Deputy Keeper of the Records, read the first portion of a paper "On the Difficulties attending on the Transcription of Ogham Legends, and the means of avoiding them." He presented the academy with a number of valuable casts of Ogham legends, in prepared paper, illustrative of the means which he recommended to be adopted with a view to obviating the difficulties attending transcription. These impressions of Ogham legends were taken in pulp, and were apparently perfectly accurate and easily deciphered. Dr. Ferguson explained the advantage to be derived from the adoption of the plan suggested; the stone on which the legend existed could be left in the locality in which it was found, whilst an accurate copy of the legend could be made, so as to be available for study under favorable circumstances. He showed how difficult it was to make perfectly accurate transcriptions of the Ogham legends, and how much of the difficulty was owing to the effects of different shades of light. These casts, however, could be moved at will, and thus much of the difficulty caused by the "shading" would be obviated.

After some remarks from Dr. Ingram,

Dr. Stokes said he was sure the academy felt greatly indebted to Dr. Ferguson for the great attention he had given to this most important subject, and the amount of research he had brought to bear upon it. He might mention, as an illustration of the force of Dr. Ferguson's remarks, that on one occasion some members of the British Association had twice failed to discover an engraving on a particular stone on the Isle of Arran, owing to the fact that the search was made at noonday, but in the evening, when the light was almost horizontal, the inscription was perfectly legible.

Dr. Sullivan congratulated the academy on the important addition to their museum made by Dr. Ferguson. The value of the Ogham inscriptions was becoming greater, and he was sure all who were interested in the science of language and in the researches concerning the language and history of this country would feel indebted to the reader of the paper for his contribution.

The paper was referred to council for publication, and Dr. Ferguson was invited to consider the expediency of accompanying its publication with engravings of the casts he had presented that evening.

A number of donations of antiquities to the museum were acknowledged, and thanks returned to the donors.

It was resolved that the following memorial to her Majesty's Government be adopted in accordance with the recommendation of the council:—

"*To the Right Hon. the Earl Granville, K.G., her Majesty's principal Secretary of State for Foreign Affairs.*—We, the President and Members of the Royal Irish Academy, desire to call the earnest attention of her Majesty's Government to the irreparable loss which would be sustained by the whole civilized world if the inestimable scientific, literary, and other collections of Paris should be destroyed or seriously injured during the siege. That city contains galleries stored with treasures of art, libraries rich in every species of literary monument, and scientific museums which are amongst the foremost in their several kinds. These collections represent the accumulated labours of many generations, and are, in truth, the property not of France only, but of the whole civilized world. Many of the objects contained in them, if once allowed to perish, no subsequent exertion could ever replace. The fate of the library of Strasbourg shows that these priceless collections are in real and imminent peril from the operations of the war. It is not for us to pronounce any opinion on the merits of the present lamentable struggle, or on the conduct of either of the contending parties; but as members of a body, having for its object the cultivation of science, literature, and archæology, we protest, in the name of the intellectual interests of humanity, against the destruction of these collections; and we respectfully call upon her Majesty's Government to use their utmost efforts for their preservation, by impressing upon the belligerents the duty of taking every possible precaution for their protection from the dangers to which they are likely to be exposed."

The University of Dublin has also memorialled the Government on this subject.

HEATING BUILDINGS BY HOT WATER.

The proverbially fickle climate of the British Islands, and the frequent recurrence of a damp and cold atmosphere, make the application of artificial heat to our dwellings and public buildings a positive necessity. Contrivances for producing an equable temperature within doors are consequently numerous, and in many instances they are of an ingenious character. Perhaps the best mode of accomplishing the desired end, as well as the simplest, is that of causing the circulation of hot water through iron pipes conveniently disposed for the purpose. Up to a very recent period, however, a considerable amount of hostile prejudice existed in regard to the use of hot water apparatus, and even now the plan of heating buildings by such agencies is not fully appreciated. Imagining that antipathy to the system arises in many cases from a lack of acquaintance with its peculiar merits, we shall endeavour to explain the principles which govern the action of hot water apparatus generally, and furnish some information as to their best form and proportions. In order to do this effectually, we must first glance at one or two of the natural laws which affect the circulation of fluids and gases. That all falling bodies gravitate with the same velocity and therefore descend through a certain definite space in a given time, is an effect of which gravity is the cause. It is from this cause that we obtain the unerring action of the pendulum. To the same source may be distinctly traced the phenomena attending the circulation of hot water through pipes, and this circulation, once created, forces all the water in the apparatus to pass successively through the boiler by which it is primarily heated. It is upon the continuous and uniform movement of the water along the pipes that the efficiency of the hot water apparatus immediately depends. Let us, then, inquire as to the power which insures this vitality, for without a clear perception of its nature there will ever be uncertainty as to the working of any apparatus of the kind in question. The force which produces circulation arises from the fact that the water in the descending pipe is heavier than that which is in the boiler, or, to put it differently, when heat is applied to the boiler a dilatation of the water within it ensues. The heated particles ascend through the colder ones, whilst the latter descend by reason of their greater specific gravity, and in turn become also heated. Expansion follows, and this species of action and reaction proceeds until all the particles are equally heated. It follows that the colder the water is in the descending pipe, relatively with that in the boiler, the more rapid will be its motion through the circulating pipes, and hence the diffusion of heat through their pores and into the atmosphere surrounding them.

Thus much of the general principles which control the action of hot water apparatus as applied to the heating of buildings, and now as to their particular dimensions and details. These will naturally have to be varied with the character and size of the buildings to be heated. For churches and large structures of a similar kind, and which have an ordinary number of doors and windows, it will be necessary in devising hot water apparatus to ascertain, first, the cubic contents of the auditorium. Having obtained this knowledge let the number gained be divided by 200. The quotient will yield the length in feet of 4in. pipe required to maintain something like a steady temperature of 55°. For smaller apartments, as, for example, dwelling-houses, &c., the cubic measurement divided by 150 will furnish the proper length of 4in. pipe. These simple rules, which are the result of extensive practice and careful observation, may be safely relied upon, unless under very exceptional circumstances, and which, of course, would have to be duly considered by the constructor of an apparatus intended to meet them.

In reference to greenhouses, conservatories, and buildings of a like character, where the temperature should reach a mean of 60°, the sum of the cubic contents divided by 30 will give the length in feet of 4in. pipe required to produce the desired effect. Forcing houses, again, must have special calculations made for properly heating them. Nothing short of a uniform temperature of 70° to 75° will suffice for such places. In order to insure this the measurement, as before suggested, must be divided by 20, the quotient being the length of circulating pipe required. For gaining yet higher temperatures, lower divisors will have to be employed, and if smaller pipes be determined upon, the length must be proportionately increased. These are points of detail, however, which may be safely left to the skilled manufacturer who may be intrusted with the making of hot water apparatus for special purposes. Our own data may be taken as the base of calculations for economically and effectually heating buildings by means of hot water.

We are aware that some horticulturists have adopted the plan of heating their forcing houses to a much higher temperature than that indicated above, and of allowing a greater amount of ventilation than is usual. By aid of such arrangements, it is said, a finer fruitage is obtained, but there is no doubt that this course involves increased expense in the first cost of the heating apparatus, together with a large augmentation in the subsequent daily consumption of fuel for working it.

An important consideration to the horticulturist and floriculturist is the waste of heat through glass roof and walls. It has been found, from a course of carefully-made experiments, that one square foot of glass will cool 1·279 cubic feet of air as many degrees per minute as the internal temperature of the house exceeds the external temperature. Thus, if the difference between the internal and the external temperature be 30°, 1·279 cubic feet of air will be cooled 30° byeach square foot of glass in the building which is exposed also to the outer atmosphere. It will be admitted that this fact should be allowed its due weight in contriving hot water apparatuses for houses wholly or partly constructed of glass. Of course, in estimating the area of glass, due deductions must be made for the sash frames and woodwork by which the panes are surrounded. If the frames and sashes be made of metal, the radiation and consequent loss of heat through them will be equal in extent to that which results from the glass itself.

The quantity of air to be heated per minute, so far as conservatories and forcing houses are concerned, should not be less than 1¼ cubic feet for each square foot of glass which the building contains. When the quantity of heated air required has been thus ascertained, the length of pipe may be determined by the following formula, viz.:—Multiply 125 by the difference between the temperature at which the house is proposed to be kept (when at its maximum) and the temperature of the external air, and divide the product by the difference between the temperature of the pipes (200°) and the proposed temperature of the room. Then the quotient multiplied by the number of cubic feet of air to be heated per minute, and its product divided by 222, will give the number of feet of 4in. pipe to yield the desired effect.—*Mechanic's Magazine.*

MISCELLANEOUS.

Omagh District Lunatic Asylum.—An order by the Lord Lieutenant and Privy Council authorises the governors of the above asylum to take additional lands and enclose same, at a cost of £1,587 5s. 9d., for the purposes of the institution. A similar order authorises the Board of Superintendence of the County and City of Waterford Asylum to buy land and make enclosures to the extent of £3,387 10s.; and those of the Mullingar Asylum to make similar purchases to the extent of £3,835.

Public Bills for next Session.—The coming Parliamentary session promises to be much more favourable to our engineers and contractors than might have been expected in the untoward circumstances of the present time. By the end of the month, when plans for new projects must be deposited, we shall probably see a larger accumulation of work proposed and designed than we had before Parliament last year in times of profound peace. Besides an average supply of petitions for bills for such miscellaneous works as gas, water, and sewage, there will be a fully average amount of railway work proposed, and an unusual amount of demand for tramway bills.

Paving by a Driver.—Mr. Charles Pinnington, of 9, St. James's-terrace, Caledonian-Road, who states that he has "been employed for the last forty years in driving a conveyance through London and the suburbs, averaging seventy miles a day," and has much meditated on the defects of various modes of paving, has at last taken out Royal Letters Patent for a new mode, which consists of laying granite or other stone blocks on wood in two transverse layers, bedded on a mixture of sawdust and unboiled coal-tar, resting on the sand or other subsoil; so forming an elastic basis for the stone blocks, through which boiled or boiling tar is to be poured, followed up by sand, thus rendering the whole water-proof, to which a coating of tar over the wood before it is laid contributes. Noise, he considers, would be diminished, the granite saved, and the paving be both cheap and lasting, as well as merciful to his beloved horses.—*Builder.*

Where to buy a Watch.—"The practical utility of a good watch—the habits of regularity it generates, and the advantages of the punctuality it assists in securing—are facts proved beyond a doubt. The establishment, then, where, at a reasonable charge, these advantages can be obtained, must be worthy of attention. At Mr. Benson's, Ludgate-hill and Old Bond-street, London, may be purchased the chronometer for 100 guineas, the mechanic's watch for two guineas, and the various other kinds of watches (duplex, lever, horizontal, or vertical) at various prices—all displaying the utmost finish and superiority of manufacture."—*Daily Telegraph.* For prices of watches, clocks, jewellery, chains, &c., see the illustrated pamphlets, which are sent post free for two stamps.

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The Irish Builder.

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Our Undeveloped Building Resources.

SINCE the commencement of the present century the building resources of the County of Dublin, and indeed of every county in Ireland, have been woefully neglected. During the short-lived national legislature of 1782-1800 some of our most remarkable buildings and public institutions were erected, and local and native stone formed no inconsiderable part of their formation. In the neighbourhood of Dublin several dozen of stone quarries were worked, and stone suitable to almost every description of buildings was to be had. Several kinds of limestone, freestone, sandstone, calp, granites, &c., of different degrees of hardness and shades of colour were quarried north and south of Dublin. Of late years the very existence of these quarries and their localities appear to be lost sight of; and builders in this city, and merchants here and elsewhere in Ireland, import from England, Wales, and Scotland whinstone, granites, &c., while as good material, and in some cases superior, lie at their very doors. This national neglect, want of energy, and ignorance is most prejudicial to building operations in Ireland, and it also reflects a shame upon all concerned.

On the east side of St. Stephen's-green, in 1768, a quarry of grey building stone was successfully worked, and in less than a dozen of years it made a fortune for its proprietor. Here was also quarried flag-stones, hearthstones, and under the above a layer of limestone. At Cabra, beyond Phibsborough, two quarries of grey building stone were worked at the end of the last century. At Finglas a black kind of stone suited for external walls, boundary, garden, and other similar uses was quarried in two or more places. One of these quarries of black stone still exists. At Glasnevin a quarry of black stone was formerly worked,—the strata was perpendicular to the horizon. At Killester and Artane similar quarries were worked in the last century, and even a few years since we saw one in operation. At Coolock a flakey kind of stone was raised; at Cardiff Bridge limestone was raised, and at Clonee a black sort of stone was quarried. Flag-stones were raised at Fieldstown and at Forest and Stradbally. At Swords, Crumlin, Dolphin's Barn, Clondalkin, Chapel Midway, Kilsoghan Ward, Braziel, grey, bluish, black, and slatey kinds of stone are to be found. Some very good quarries are still to be found in some of these places. At Lutrelstown limestone and other building stone may be found, and near Palmerstown a quarry of good firm building stone was worked formerly, and extensive beds of it still exist. At Lucan, Blue Bell, Dunsink, several quarries of black, blue, and greyish building stone were formerly worked. The County of Dublin possesses extensive beds of dark grey and black stone, well fitted for building purposes. This stone is more generally known by the name of calp, but there are several descriptions of it, some firmer, durable, and taking a polish; other descriptions flakey and unfitted for outside work. Formerly some description of the calp was worked into beautiful chimney-pieces, tombstone slabs, tablets, &c. This County Dublin stone was used in the last century for a variety of purposes, and in many of our old city dwellings it may be found in the shape of hearthstones, flooring, and externally for piers of gateways, and in memorial tablets inserted into some of our city churches. Some of the black and grey descriptions of this Dublin stone contained spars, crystals, pyrites, and of course possessed sulphurous properties. South-west of the city, on the Dodder, a fine hard description of building stone was quarried in the last century; it was considered by the old masons and builders of the city as the hardest of any kind of stone quarried in Dublin. The old spire of St. Patrick's was said to have been built of it. It is as hard as marble; it can be smoothed with sand, but it does not take a marble polish.

At the Red Cow, near Dublin, a good description of building stone was formerly raised. This stone was hard, and well fitted to bear the weather; it was flinty in its nature. This quarry supplied immense quantities of stone for the following uses:—hearth-stones, head-stones, tomb-stones, flags, steps. The steps leading to St. Paul's, London (was said in the beginning of this century) belonged to this quarry. At Milltown there is a black sort of building stone, and at Crumlin. At Clontarf a quarry of bluish sort of stone was formerly worked. Those at Killester were black, and the quarries were known by the name of "The Black Quarries." Good flag-stones were raised at the latter quarries; and near Booterstown and at the south side of the Hill of Howth a grey sort of building stone was formerly raised in great plenty. In Dalkey and around that neighbourhood superior granite is to be found, and was formerly worked.

We might point out several other valuable descriptions of stone to be found in the neighbourhood of Dublin: flint, millstone, porphyry, or almost approaching it in nature. The granites or freestones of Dublin, Wicklow, and Wexford are beautiful, and take a high polish. The modern spire of St. Patrick's, part of Essex-bridge, the piers of Wicklow and Kingstown, and several of our old public buildings and bridges are composed in great part of Dublin and Wicklow granites and other local building stone. *En passant* we may remark here that minerals are abundant in Dublin, Wicklow, and in several counties in Ireland; but in the neighbourhood of Dublin lead, copper, and even silver are to be found,—the two former plentifully.

From what we have shewn above, it may be seen at a glance what a mine of building wealth lies under our very feet neglected, while we are squabbling in our public councils over the drainage of Dublin, and sending the money out of the city for Welsh whinstone and Scotch iron. In the County of Dublin we have every building material that can be well required; quarries of limestone, sand pits, potter's clay, clays for bricks, tiles, chimney-pots, earthenware, &c.

At the close of the last century in Dublin, pottery and earthenware, tiles, brickmaking, and glass manufacture was extensively carried on, and in the matter of builders' ironmongery we had several manufacturers. How do we fare to-day in these respects? Alas! from the teething toy that rattles in the mouth of the infant to the black tack that nails down the black cloth on our coffins, all is imported across the Channel, and poor Dublin is impoverished and emaciated.

We trust that our words to-day will wake up a little public spirit and animation amongst our architects, builders, engineers, sculptors, artists, and artizans, and prompt them to do something in the future toward developing the native resources of their country. Each can do a little, if they will only recommend their respective employers and patrons to make a trial in using the material to hand,—the same material that our grandfathers were content to use, and which they so successfully worked up into beauty, form and durability in our grand old city structures, mansions, and appendages.

We hope when the main sewers of Dublin are commenced, that native brick, stone, lime, and cement will be utilized, and that large amounts of public money will not be voted away, but that Ireland and native workmen will be encouraged, and native materials turned to advantage.

What need is there for Portland or Purbeck stone, except as a matter of taste, when such superior granites can be worked as we have within our reach? We don't object to see foreign merchants driving a trade in Ireland if they have courage to do so. There are many things we must import from England and abroad that circumstances have not yet placed within our reach. Englishmen and Scotchmen and foreigners import Kilkenny marbles, and we are glad to see Irish marbles so highly valued in the sister country; but what we do object to see is that suicidal policy and perversity that debars men from using the materials at their own doors, and in the pursuit of a criminal passion, and in the upholding of a demoralising fashion, stabbing their country in her most vital parts. A country's wealth is a country's life-blood; if her resources are dormant, commercial energy is almost lifeless, and trade and manufactures exist but in a name. A mutual reciprocity between nation and nation is always a healthy state of society, but when it is one-sided, annihilation must be the fate of the weaker party.

In building up a nation it is much the same as in building up an edifice. A noble design and noble hearts and hands, with fitting material must be provided. If we would build up Dublin anew, or even protect her former architectural grandeur from decay, we must do as our fathers have done. Like materials will produce the same beauty again and again in proficient hands; the architect and the workman will not be wanting; genius and talent, like other of our native resources, will be found commensurate with the greatest undertaking that our future wants may render necessary for our national welfare.

THE PROPOSED LOWERING OF ESSEX BRIDGE;

WITH SOME ACCOUNT OF THE FORMER AND PRESENT BRIDGE.

The question of improving Essex Bridge has recently turned up in rather an unexpected manner, much to the surprise of the citizens of Dublin, and leaving the far more important matter of remodelling or rebuilding Carlisle Bridge to a considerable extent shelved for the present. There can be no second opinion but that the traffic over the latter is carried on under circumstances which are absolutely dangerous, and it is indispensable to the safety of the public that it should no longer be permitted to remain in its present condition. With Essex Bridge it is altogether different; there is no heavy traffic passing over it, and, no matter how improved, ever will be. No doubt it is highly inconvenient, from its steep ascent, for the transit of vehicles, but there is nothing in its condition approaching to risk or danger to passengers, and certainly it might be allowed to remain as it is for a few years longer, until the heavier expenditure had tried the patience of the taxpayers; but this is just what the Corporation fear, therefore their alacrity, and therefore the chances of Carlisle Bridge improvements being shelved. I cannot otherwise understand how, without scarcely any previous notice, a matter involving the expenditure of so large a sum could be voted,—a sum which about doubled would execute the far more needful requirements of the other bridge, and satisfy every want of the community except those interested in a costly and, under existing circumstances, perhaps a wanton outlay. What with the main drainage, the rebuilding of Carlisle Bridge, and the lowering of Essex Bridge, there appears an amount of taxation in prospective which will render property in Dublin of little value, and hang like an incubus over it for many a long year.

We may as well make up our minds that the remodelling of Essex Bridge will be carried (unless more strenuously opposed than it has hitherto been), as little doubt remains but that in next presenting term the Corporation will succeed in obtaining the £14,000 sought for this purpose, and as the aspect of Semple's Bridge will then be totally changed, I think it may not be uninteresting to give a few particulars respecting its erection, and of the former bridge which existed upon the same site.

Upon the spot where the southern abutment of the present bridge now is stood a massive square-built tower, with an arched gateway underneath, called Izod's or Newman's Tower, adjoining to and forming a part of the city wall, and being one of its gates; it was built out on the strand of the Liffey, closely adjoining to an inlet of the river, which at high tide formed a small harbour, and from here it is said, in 1534, Archbishop Allen attempted to escape to England from the rebellion of Thomas Fitzgerald, son of the Earl of Kildare, but he was afterwards taken at Artane and put to death by the insurgents. The traffic of Dublin at this period and up to 1670 was wholly carried on by means of one bridge opposite Bridge-street, and uniting the Danish suburb of Ostmantown, or Oxmantown (as it has been since called), with the city. In this year a wooden bridge was erected on the site which was afterwards occupied by a very primitive piece of antiquity which I remember in my younger days standing opposite Watling-street, and which derived its appellation, Bloody Bridge, from the fact of a number of people being killed in an attempt made by the apprentices of Dublin to destroy the before-mentioned wooden bridge. This bridge is now replaced by a single arch entirely of cast iron. In 1675 Newman's Tower was demolished, and replaced farther inland by a gate and tower, called Essex Gate in honour of Arthur, Earl of Essex, then viceroy, and from him the former and present bridges derive their appellation. In the year 1676 Mr. Humphrey Jervis, who was afterwards Lord Mayor, and knighted in 1681, and who appears to have been singularly unfortunate as a bridge builder,[*] commenced the first bridge which stood on this site. It was erected of the stones removed from the dissolved Abbey of St. Mary, but in eleven years afterwards, in consequence of a great fall of rain and violent storm causing an unusually high tide, a portion of one of the piers gave way on the 5th December, 1687, and a hackney coach happening at the time to be in the act of passing over (providentially without any passengers), was carried into the river, coach, coachman, and two horses, and swept down to the watering slip, which then existed opposite where Bedford-row now is; one of the horses broke his traces and swam out, but the coachman and the other horse were drowned. This bridge consisted of seven arches, and was originally but 20 ft. 5 in. wide, but being found too narrow for the increasing traffic, an addition was built to it on the west side, forming a footway of 9 ft. 5 in. in width, and divided from the carriage-way by a low wall. The shape of the cut-waters was carried up in the parapets, both sides forming angular recesses, as we often see in old bridges. The entire structure was of the plainest and most primitive description, and scarcely any attention was paid to securing a proper foundation for the piers and abutments, the piers being built on oblong frames of oak sunk upon the bed of the river and allowed to settle down by weighting. The addition of the footway appears to have been a failure from the beginning, as even less precaution was taken for its foundations, the cut-waters being merely levelled down, and the remainder built on the bed of the river; therefore it is not surprising an unequal settlement occurred, causing a separation the entire length of the bridge, which, when at the period of its removal, shewed a chasm of fully 8 in. in width. One extraordinary feature in connection with this bridge was the pedestal and statue of George I., erected in 1722, which stood out in the river on the west side, and connected with the bridge by an arch.

In the early part of 1751 fully one-half of one of the piers of the original portion of the bridge gave way, thereby causing the collapsing and consequent fall of two arches, and rendering the carriage-way wholly impassable. A temporary expedient was resorted to by the Corporation—trussing over the space occupied by the fallen arches with timber, and forming a carriage-way with strong planking across the opening,—and it was again opened for traffic. Previous to this a diagonal opening shewed itself the entire way across another of the arches, owing to a subsidence of two other of the piers; and the last failure proving the danger and insecurity of the entire structure so forced itself upon public attention, that the Corporation resolved to build an entirely new bridge. In these days there appears to have been little or no competition amongst architects. The designing and building of the present Essex Bridge was in a manner forced upon Mr. George Semple, who, in his treatise on building in water (published subsequently to his experience derived from actual practice in the foundations of Essex Bridge), acknowledges "it somewhat alarmed him"; but he at once began to consult his books, of which he had a large collection, and was chagrined to find all his authors silent upon the matter. He then went to London and purchased £40 worth more, but, after attentively perusing them, he found himself in the same predicament as before. Nothing disheartened, he set about making his plans, and finally decided upon taking his model from Westminster Bridge, London, then in course of construction. These plans were approved of, and he again confesses himself in a difficulty with regard to the construction of coffer-dams, from which he was eventually relieved by writing to a friend in Paris, who forwarded him "Bellidor's Hydraulic Architecture," and he says "my drooping spirits then instantly revived, and I immediately went on with my work with vigour, and entertained the most sanguine hopes of success." These difficulties redound greatly to Mr. Semple's credit, and prove he must have been possessed of no ordinary mental capacity to undertake a work comparatively of such magnitude under influences which would discourage minds of less grasp but perhaps of larger previous acquirements. In him, it is apparent, circumstances called forth the latent genius of the architect, for he has certainly left behind him a monument which will bring no discredit to his fame—its only fault being that it is pitched too high for modern traffic. It had another fault in an artistic point of view—the ballustrading was much too high, as shewn in Malton's view; and the arched recesses or niches, which stood projecting like huge sentry-boxes on the second pier at either end and both sides, were blemishes rather than ornaments. Both of these defects have been improved upon in latter years; the niches have been removed and the ballustrading lowered to a reasonable height. The statue of George I. was taken down 19th January, 1758, and from thenceforward the works were pushed on with great vigour, and completed in about two years, at a cost of £20,500, and on the 8th of April, 1755, the lord mayor and sheriffs were the first to drive over the new bridge. The statue, as I[*] find by the "Gentleman's Hour-glass," published by J. Hoey, 1752, when taken down was removed to the garden of the Mansion House; and further, that it was said to be cast in the same mould as that in the centre of Leicester Fields, London. From the "Dublin Journal," 2nd August, 1798, I extract the following:—"In the year 1798, on the anniversary of the glorious 1st of August, the Right Hon. Thos. Fleming, lord mayor of this city, had the honor of raising to public view, in the Mansion House garden-front in Dawson-street, the elegant equestrian statue of George I., of glorious memory, which had lain in an obscure situation in the garden since it adorned Essex Bridge in 1752. It is raised on a handsome pedestal erected by his lordship, on the front of which is placed, on a tablet, the following neat but expressive inscription:—

'Be it remembered
That at a time when rebellion and disloyalty
Were the characteristics of the day,
The loyal Corporation of the City of Dublin
Re-elevated this Statue of the
First Monarch of the House of Hanover,
Anno Domini 1798.'"

Looking back upon the total cost of the

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[*] In the year 1670 Mr., afterwards Sir H., Jervis built a bridge of timber across the river where old Ormond Bridge afterwards stood; whether from its injudicious construction or otherwise it lasted but two years, being carried away by a heavy flood. And referring to his connection with the former Essex Bridge, the following appears in Pool and Cash's "Dublin":—"The fate of the undertakers of this bridge was very remarkable; Sir H. Jervis, the founder of it, was confined in goal for several years; and Mr. Robert Mark, a skilful mason, who executed the work, was a considerable loser by a mistake in the contract, added to several unforeseen accidents, and were he not more happy in his credit than in his engagement, must have undergone the same fate."

[*] I have again to acknowledge myself indebted to Dr. Thomas Willis, sen., for having placed at my disposal numerous notes and extracts in connexion with the former and present Essex Bridge.

present Essex Bridge, it seems difficult to discover how so large a sum as £14,000 could possibly be expended in remodelling it, and it would appear as if an unusually large margin was provided for contingencies. Be this as it may, the already heavily-taxed citizens of Dublin should insist upon the much more needful improvement or rebuilding of Carlisle Bridge being proceeded with before any modification is attempted upon Essex Bridge. They should be up and stirring: it is not yet too late.

William Hughes.

OUR CITY AND ITS STREETS.

At a meeting of the Municipal Council on the 1st instant,

Councillor Keatinge, on the part of his constituents, wished to ask publicly why it was that the streets of Dublin were kept in such an unsatisfactory state? They had never been in such an intolerable state of filth and nuisance as they were now, and had been for the past two months. It appeared to him as if the whole staff had been taken away! He lived in one of the greatest thoroughfares in the city, and he had not seen a scavenger for some time, and it was almost impossible for anyone to walk because of the accumulation of *debris* in some of the streets. It was the intention of some influential men to call a meeting in the Rotundo to take measures to have this great evil remedied—to take the matter out of the hands of the Corporation; and he thought if they did so the public would be very well satisfied.

Councillor Dennehy said the state of the streets was a perfect disgrace. £50,000 was raised for cleansing, &c., and if the Corporation did not do their duty, the citizens would be forced to go before Parliament, and seek for powers to have them kept in a better state.

Councillor Norwood stated that *a committee of the whole house* had been appointed *early in the present year (!!!)* to take this subject into consideration and devise some method of remedying this crying evil, and to report to the Corporation. That committee had sat on several days; their report was *in course of preparation*, and when it was submitted to the Corporation, they would see they were hampered by want of means and by other causes. He was not without hope that some suggestions would be made, and that, by a proper application of their funds, they would be able to overcome the difficulties in the way.

From the statements made at a subsequent meeting on the 5th inst., the citizens are consoled with the prospect of having to rest satisfied with dirty thoroughfares unless they allow themselves to be *further mulcted* in taxes.

Alderman Hamilton explained as to the expenditure by Committee No. 1. The improvement rate, levied at the rate of 2s. in the pound, should bring in £48,000, but it did not, in fact, bring in more than £38,000! and that was *all* they had to do the work connected with the streets. It was *a delusion*, then, to say that the Corporation had £48,000 a-year for the cleansing of the streets. There had been expended £7,534 in paving, in the year; in macadamising, £13,673; in flagging. £3,242; in scavenging and watering, £10,922; and £8,000 for lighting and small miscellaneous accounts, all making up £37,000, which left the Committee with a deficit of about £600. The Corporation had also been accused of not cleansing the pathways, but the fact was that the pathways were not within their control. Under 17 Vic., c. 54, sec. 17, the Police Commissioners were empowered to compel the inhabitants to cleanse the pathways before their houses. He was astonished at reading in the newspapers that a learned justice had absolutely threatened the Corporation with the terrors of the law for not cleansing *the pathways!*

Mr. Dennehy thought that the public grumbled, not at the amount levied, but because that they got the *least possible value* for it. For instance, they were charged £7,000 a-year for horsing the scavenging carts, and during last winter they hardly ever saw a cart. The streets were swept, and the mud left against the kerb-stones, so that even should the citizens sweep the pathways in front of their business establishments or residences, they were made as bad as ever in a very short time.

Alderman Durdin asked leave to make a few remarks with the view of giving information to the public, supplemental to that provided by Alderman Hamilton, on a subject which has been prominently brought forward of late. In the year 1847 the Government valuation of the city was £663,000. Based upon that valuation, the Corporation went to Parliament, and asked for a Bill to enable them to levy a sum sufficient for the paving, lighting, and cleansing of the streets under their management. The power sought for was given, a restriction being placed, however, at 2s. in the pound. That was found to be sufficient for all purposes; but what happened in a short time afterwards? There was a revised valuation by Sir Richard Griffith, the result of which was to diminish their income of the 2s. rate by the sum of £10,000. That change had thus reduced their revenue by £190,000 in the nineteen years, besides which the wages of labourers, &c, had increased by 25 per cent., and they had 21 additional miles of new streets to supervise. Indeed, in place of a reduction of £10,000, they should have had an increase to that amount. The funds at their disposal were totally insufficient, and if they were to keep their streets in a satisfactory state (for he admitted that they were disgraceful at present), they must either have a revised valuation or get a new Act of Parliament enabling them to levy 3s. in place of 2s. in the pound.

At the Southern Divisional Police Court on the 3rd inst., Mr. Henry G. Henderson, one of the proprietors of the *Evening Mail*, appeared to answer the summons of Constable Kelly, 98 A, for not having the pathway in front of the office in parliament-street, *kept clean* on the 18th ult.

Mr. Henderson, when the case was called on, said that on the day in question he had given orders to his servant to have the footway swept, and he actually saw it done. He could not understand upon what principle the police issued these summonses—they appeared to be very partial to certain parties, for he could prove that the footway in front of the City Hall was almost always in a dreadfully filthy state, and yet he had never heard of the representatives of that body being brought before his worship's court.

His worship said this was one of a class of cases in which he entertained great objection to act with any degree of severity, as he had a very strong opinion on the matter to the detriment of parties not before him. It was a matter of comment to every citizen, the filthy condition of their streets, and, in his opinion, the Corporation, and not private individuals, were greatest to blame. Indeed, so long as the Corporation neglected their duty in cleansing the streets, they should not expect that the footpaths could be kept in anything like decent cleanliness. He should dismiss the summons.

ALBERT MEMORIAL, HYDE PARK, LONDON.

Although the Nemesis of a spurious enthusiasm has fallen on the Albert Memorial and all its belongings, that building, at least, has claims as a work of art which must not be regarded with apathy or self-content. It is, except the restored Sainte-Chapelle, by far the most splendid of modern Gothic structures; more pretending than the Parisian example, it is more original. With all its architectural defects it is void of the iron conventionality of its allied memorial, the Mausoleum at Frogmore; its decorations are free from the puerilities, at which the artistic gorge rises so strongly, of the *tarsia* works in the Wolsey Chapel. We noted lately that the sculptures for Hyde Park are nearing completion. The statue of the Prince for the centre, as if to escape eyes that were eagerly censorious, has been since boarded up, so as not to be open to criticism. Whatever may be the quality of this work, it may be comforting to Mr. Foley to know that some of its alleged defects are impossibilities. Mr. MacDowell's group, "Europa," has been placed at the south-western angle; the figure of the genius of the Continent looks, as we feared it would, extremely trite and poor; the bull on which she sits is tame enough to have been designed, as the accessorial statues might have been, for barley-sugar sculpture. The execution of this group is evidently rather above the average in decorative examples: we think it is thus far honourable to the sculptor, but should have been grateful for an instance of a higher class of work in all respects. Enough of the upper part of the structure is now visible to display the design of that part, but not enough to enable one to judge the whole; there are no doubts that the less satisfactory half of the design is displayed, and that the aspect of the whole, apart from the sculptural groups and statues proper, will be highly effective and popularly attractive. The original defect of the design, the union, or non-union of the canopy and the spire, is ungracefully obvious. So is the inelegant form of the pinnacles at the angles, between the pediments, of the main structure: these pinnacles are very ill-designed, disproportioned, and badly placed, to say nothing of the throwing away of the opportunity they admitted to cover from some points of view the graceless junction of the spire with its support. The finials of the pediments are hideous. On the other hand, there is much beauty in the spire itself, marred only by the uncouthness of the cross at the summit. We need not now deal with the question whether or not such an elaborate work should be exposed to London smoke. As to the vast quantity of gilding employed, it seems to us to have been preposterously challenged by those who do not reflect that gold alone retains a splendid appearance in the foul metropolitan air; that, while its durability is great, it is the only covering which permits complete cleaning. We think the architectural merit of the design would have been enhanced by omitting the spire altogether and trusting to the severer canopy. The mosaics have already lost much of their garishness: kindly soot is toning them down not disagreeably.—*Athenæum*.

REDUCTION IN THE HOURS OF LABOUR.

The following lecture on "The Advisability of a Reduction in the Present Hours of Labour," was delivered on the 27th ult. before the members of the St. Kevin's Literary Association, Synge-street, by Mr. John Dooner; Mr. Glynn, in the chair:—

Gentlemen,—In soliciting your attention for the purpose of hearing a discourse advocating the very important matter of a reduction of the present hours of labour, it may be right to inform you, by way of apology for thus intruding myself upon your notice, that I have often heard it said, that working men hold most extraordinary opinions with respect to what they consider to be their rights. Those who are in the habit of making such a remark have never experienced the many grievances which the working men at present have to contend with. As it is very seldom such grievances are complained of in public by the working men themselves, I hold that the mechanic and the unskilled labourer should come forward at once and speak up boldly, that the world may know what it is they require. Feeling deeply interested in the welfare of my fellow-workmen, I have come forward to lay before you opinions gathered solely from experience and founded upon my own observations. In doing so, I have not deemed it expedient to come prepared to mourn over the past, because I have no time to look back, having sufficient to accomplish in battling with what I consider to be the great evil of my class at the present time, and doing my utmost to prevent it from existing in the future. So just and reasonable, and so in keeping with the times, is the demand for a reduction of the present hours of labour, I trust I shall be able to lay before you opinions which, if looked at from a common-sense point of view, will not be termed extraordinary.

Who is there that has seen this noblest work of God—this daily toiler of ours—rise from his bed and step forth with willing stride to win his bread by being useful to his fellow, and who will take occasion to observe him when returning in the evening after ten hours' labour with straggling gait and head bowed down, but will not say he has been overworked, and who will not add—it is a pity? Not a pity that he should be obliged to labour for a living, but a pity and a shame that the rules which of necessity, through bad management, he is bound to obey will not allow him to desist when the spirit within him says enough. A pretty long experience has taught me that after eight hours' attention to his duties, with the usual interruption for meals, the energy with which the artizan performs his task begins to lose itself, and the limbs that served him fairly up to that time begin to feel fatigued, and the mind to cry out for rest. The operative who finds, however, that the overseer's eye is upon him, and that two hours more must elapse before his work is done, turns to it reluctantly, often cursing the fate that launched him on labour's dreary road,—thus with soured spirit and brooding brow he trudges on the rest of the time, often exclaiming in the bitterness of his soul, the poor man's labour is never done!

With the invention of steam, and the easy application of its powers to the manufacture of almost every article required by man, great were the expectations which were formed of the blessings which would accrue to the operative from its employment; but, alas, he has to work still as long as if it had never been invented. I do not wish to infer for a moment that it has not been of any benefit to the workman; as far as physical exertion is concerned it has lightened his labour a little; but while it has been the means of increasing the percentage of the capitalist to an enormous extent, it has not benefited the operative in a like proportion. Why is it we find the majority of working men, after a few years' constant labour for ten hours per day, lose their natural liveliness, and begin to feel a dislike for their trade, no matter how well they may have liked it in the beginning? Even the boy, who comes under the same rules, in hundreds of instances feels an aversion for the business he is apprenticed to before he is half out of his time. The sudden transition from the school-room and the short hours to the workshop and the long hours plays so much upon his physical and mental system that he is soon an indifferent learner. If the directors of National Education have thought it wise to allow one hour's recreation out of five during school time, why would it not be right to extend the same rule to the workshop, and confer a like benefit upon the boy of fourteen or fifteen who was taken from school but the day before. Parents and guardians of boys thus circumstanced can affirm that they have to be continually coaxing and exhorting their children, to keep their spirits from sinking under the weight they have to bear by being employed for ten hours every day; aye, and very often they have to threaten, and frequently to punish them, besides relating innumerable stories concerning what generally happens to lazy people. A man may be lazy, and he may also be overworked, which I maintain he is who has to work ten hours per day, no matter what is his occupation. Half the anecdotes which we hear bearing upon the point laziness, if properly examined, will be found to be framed for the purpose of extracting more work out of the human frame than what is natural or healthy. I remember one concerning a lazy sawyer, who, it was said, was in the habit of resting very often at his work, but, as there was a close eye kept upon him, not longer than while his mate in the pit was greasing the saw. Our hero, being top sawyer, of course had the command, and what was sneeringly quoted as a fault upon his part was, that he used to notify to his mate in the pit his intention of resting by singing a couplet of his own composing:—

"Put in the wedge, and grease the saw,
The day is long, and the wages small"

The song of the sawyer having come to his master's ears, the latter promised to reward the man in the pit if, by hook or by crook, he could get above his mate for one week, and give him six days' hard work, which was, according to the story, accomplished to the discomfiture of our toiling bard. But, after all, there was this truth in the song, the day *was* long and perhaps the wages were small enough.

Clerks in banking houses and respectable attorneys' offices have not much physical labour; they are only occupied for six or seven hours per day, and in some places less. Or, let us take the occupation of a policeman; his work is not very hard, unless he meets with a very troublesome drunken man, and then he generally has three or four more to help him to take the offender to the lock-up. He does not work—if work you call it—ten hours per day; his time on duty is seven hours to-day and nine hours to-morrow, making an average of eight hours per day. Let it not be understood that I object to this; on the contrary, I believe it to be right; but still it looks somewhat curious that those on whom the taxes—out of which all public bodies are paid—fall the heaviest, are the hardest and the longest worked.

Since the commencement in England of the half-holiday movement, as it is called, the men of that country have fought gallantly for a reduction of the hours of labour, with various successes. In London, Liverpool, Manchester, and other large cities and towns the hours for labour are from fifty-five to fifty-six hours per week; here we have to work sixty; and when the half-holiday movement began to spread itself to this country, and to be partially adopted, the employers of this city—ashamed, perhaps, of being so much behind their neighbours over the water —came to the conclusion to give their men a quarter holiday, by allowing three hours of an earlier stop on Saturday; but to do this they clipped half an hour each day off the meal hours, to make up for the time thus granted, so that they still get sixty hours per week. Magnanimous Dublin employers! They are trying thus to keep up with the advancement of civilization, and yet secure their "pound of flesh." Let us hope that this mean clipping of the meal hours will be discontinued, and that the employers of Dublin will at least become as good as their neighbours.

Let us now see what effect a reduction of the hours of labour would have upon the social and moral condition of the working men, and how it would advance the industry of the country. These are points to which I wish to call the special attention of gentlemen who are labouring zealously to spread the principles of total abstinence from spirituous liquors, and to philanthropists in general. They complain—and very justly too, in my opinion—that the public-house is the curse of the country, and its support the bane of the working man, and the ruination of himself and his family. These truths they are trying hard to instil into the minds of their hearers at every opportunity, but with very little success, because they do not strike at the root of the evil. The root of the evil of habitual intoxication is this—the artizan or unskilled labourer is compelled to work too long for his living, and, therefore, has no time to visit the library where he is invited, to attend at lectures and museums, or to patronise the theatres and such-like places of instruction and amusement. Public-houses being more plentiful, he can soon find one which will be nearer to him than any one of those places which I have named. The public-house in many parts of the city is the daily toiler's theatre, news-room, and general place of recreation. Now, although I have stated ten hours as the time which the artizan of the present day has to labour, how many thousands are there whose time is occupied for fourteen hours out of the twenty-four, while they only get paid for ten? Take the case of a man who has to walk so far from his home to where he is employed that he must be out of bed at five o'clock in the morning—which in winter time looks like getting up in the middle of the night,—and who is not home again until seven in the evening. He labours ten hours, is allowed two for his meals, and two more take him back and forward. Then at least eight hours must be allowed him for sleep; and if he only nurses the baby for half an hour out of the two he has left, where can he be expected to go, or what can he do to improve his mind, out of the one and a-half which remain? A cry has been raised against the working man, as if all the immorality in the country sprung from his improvidence. But, I dare affirm, the man situated as I have just shewn, and who attends a lecture, a library, or any place of instruction, makes greater sacrifices to morality than those who lecture him ever think of giving him credit for. When I read in the newspapers of the reception given to a great actor,—when I am informed that the house was crowded from floor to ceiling,—I ask that, if the reporters were to visit the different workshops the morning after the performance, they would find that nine-tenths of the working men who visited the theatre the night before were absent from their places? Does not this entail upon each man the extra expense of a quarter day's pay for his visit to the theatre?

As regards the industry of the country, we would wear out more clothes than we do at present if we had more time at our disposal. I once knew a man who showed me his wedding suit, nearly as good as new, after being seven years married. On asking him how he kept it so, he replied that it was seldom he went anywhere beyond a visit to a neighbour a few streets off, on account of having to labour ten hours per day. "He seldom goes on any excursion now," put in his wife; "his place of amusement is the public-house next door. He spent the price of a new shawl in the same public-house within the last three months." "I will admit that," retorted the husband; "but the last new shawl you have had is here in the box, full of holes from the moths. You who have the children to mind cannot go out but once in a month. You cannot contrive to give your dress even the airing which I manage to give my wedding suit." "I have no time to take her out," he continued, "so that whatever wearables she has are worn as I say. The money I spent in the public-house afforded me some amusement while resting after my day's labour." Why don't tailors and drapers look into this, and support the cause of the working man. It should be the duty of railway companies to do the same, and of steamboat companies and managers of theatres also. In fact it should be the concern of every man interested in the industry and general welfare of the country to look at it in this light. Thus the porter and the whiskey sellers grow rich upon the money of the son of toil, who is compelled to patronise them, because he is doomed to work ten hours per day. When this is the case—and, I submit, the very root of the evil of intemperance,—will any right-minded man object to a reduction of the hours of labour? Let it be put to every temperance lecturer, to make it known throughout the land, that it is because the working men have to labour too long for a living that makes them unable to attend to solicitations to become wise and virtuous. When you send your wives and daughters to the grocer, the baker, the butcher, the draper, the dyer, the stocking-weaver, &c., be sure and instruct them to say that it is because you have to work ten hours per day that they get less of your custom than the whiskey and porter sellers. If we had a reduction of the hours of labour we could tell temperance orators to spare their lungs, for we had got at the root of the evil of drunkenness, and by that means we would all be soon a sober and steady people.

Those who are in the habit of supporting the working man for political purposes think it a great thing to make speeches about the so-called deplorable ignorance and unmanageableness of the son of toil, while they know next to nothing of what really affects him. The more such people talk, the more they seem to be unacquainted with the subject; and when they are told what is really wanted, they seem not to understand the matter at all. They are like English statesmen, who, after vain endeavours to satisfy us by half measures, cry out, "what on earth is it the Irish want;" although they have been informed over and over again that nothing but legislative independence will satisfy us. The same way with those would-be supporters of the working man: they ask, "what on earth it is he wants," after being told that the first and most essential reform is a reduction of the present hours of labour.

There is another class of people who wonder very much what it is the working men want; they are called aristocrats, and they, by the aid of mercenary writers, arrogantly denounce the working man as a most unmanageable and extraordinary being, because, indeed, he aspires to a better position in society than what he now occupies, and this, too, in the face of the parrot cry—"Educate! educate!" If they want to educate us, they must give us time to learn; and when we are enlightened we ought to have time to enjoy the tastes which follow in its train. I remember once reading a series of letters from the pen of a noble lord, who tried hard to prove that there was an increase in the demand for labour in this country, owing to the decrease in its population effected by emigration. He also asserted that wages were improving; that in some places agricultural labourers were paid at the rate of 1s., and even 1s. 4d., per day; that the mechanic's pay had also increased, and wound up his statements by exclaiming that he could not see why working men should not be happy and contented. What a curious way some people take to prove what they wish to have accepted as truth. They rush into print, and, after occupying whole columns with one-sided views, wind up with assertions of an arrogant nature, and comparisons of the present so-called liberal and enlightened days with those when the labourer was a serf and the bondman of his feudal master. Or, in place of giving some practical illustrations of the wisdom of their advice, happily cry out for space. A very handy thing is this want of space with modern writers. When they have just said enough to suit their purpose—when it would be dangerous to their views, perhaps, to go any further,—they conclude by exclaiming, "only that it would be intruding on your valuable space, Mr. Editor, I could prove so-and-so!" Would it not be more satisfactory if some of this seemingly excellent advice was put into practice by those who give it? You remember the gentleman who wrote in the *Pall Mall Gazette* that he drove in a carriage to an obscure street convenient to a London workhouse; that he alighted from said carriage, and proceeded in the garb of a beggar to seek admittance into the casual ward of the workhouse in question for the night. You remember his description of the night which he spent there, and the hubbub its appearance in the papers created amongst our modern philanthropists, who are for ever preaching about the negligence of the working classes, and the idleness of those who are really indigent, and kept so for the want of wise and beneficent legislation. This little practical experiment had the effect of exposing the malpractices of workhouse officials, who, if questioned before on the matter, would make it appear all right by a few dashes of their magnanimous pens, exhibited in a limited space, for the enlightenment of the world. If the writer of those lordly lines to which I have alluded were to take it into his noble head to give us a practical proof of how he could obtain and execute the work paid for at the rate of 1s. and 1s. 4d. a-day, it would be a great satisfaction to the labouring world. Let him don the peasant's attire for one six months, and stand at the market cross of a provincial town until the farmer comes to employ him, as I have often seen farm labourers do; and if he is not employed to-day, let him go back to his humble cabin and comfort his wife and family with the *hope* that there will be work to-morrow, while he tries to maintain them and himself out of the one shilling which he earned the day before! Let him do this, and then tell us how happy and contented he felt. Or let him take a turn at a hod with one of our Dublin builders, and, after exerting himself for sixty hours for 12s., accompany his lady to market on Saturday evening, and then let us know how he laid out the money, and the quantity and quality of the eatables and drinkables which he purchased for his week's wages. Many of us here would be glad to learn how all this boasted happiness is procured which he asserted was so easily obtained. "Oh! you working men! you working men!" exclaimed a supporter of this noble person's views to a friend of mine who sought his charity on behalf of a sufferer; "you never lay by anything for the rainy day." "How can we, sir,' replied my friend, "when provisions are so very dear? We cannot buy a middling beefsteak under 10d. a pound." Whereupon this gentleman employer enquired if it were possible that working men eat beefsteaks! He then entered into an elaborate sermon on such folly, and compared the position of the working man of to-day with him of the past, forgetting all the while that he would the next day be one of the first to cry out "educate! educate!" with those who deem the labourer's ignorance the cause of all his poverty;—this, too, in the face of the fact that the education with which it is hoped he will become possessed of would make him aspire to something above potatoes and salt, mud cabins and rags.

What should we care about the past further than take a lesson from it? If our forefathers were once the slaves of the ancestors of those who make up this so-called nobility of the present day, is that any reason that we should remain the slaves that we appear to be—that we are, if we do not oppose their domineering and intolerant doctrines with respect to the time we should work, and the pay we are to receive in return? We must bestir ourselves if we mean to become freemen, and enjoy our share of the fruits of the earth produced for all alike. Let us remember that this is the nineteenth century, the age of progress and liberality amongst men. Let us tell those who over-work us that we have benefited by the little light which we have obtained lately, but that we want more. Let us tell them that we cannot satisfy their demands upon us without another instalment of our rights in the shape of a reduction of the present hours of labour. Let us then come forward, every body that has anything to say, and, if we do nothing else, let us criticise the time worked by the officials of the State, and the pay each servant receives in return. A servant of the people receives, in some instances, more than seven times as much in one year for his wages as a working man would earn for sixty years, and to be every day employed working sixty hours per week, or ten hours per day. I will try to lay before you a simple statement of an officer's salary, which, perhaps, many of you never thought of examining into. On looking over the pages of the *Civil Service Gazette*, some-time ago, I found the different amounts, in pounds sterling, paid yearly by the people to their servants. The highest on the list was £22,000, which is the yearly salary of Ireland's Lord Lieutenant. Let us take these £22,000 and place them side by side with the wages of a mechanic earning £1 per week, or £52 per year, for sixty years; £52 per year in sixty years would amount to £3,120; take £3,120 from £22,000, and there will be £18,880 remaining; therefore £22,000, one year's salary of the Lord Lieutenant, is more than seven times as much as a mechanic could earn at a £1 per week for sixty years, without losing one hour of ten every day during all that time. Those who think that this calculation is out of place, on the ground that governors must be paid, I will answer in an epigram of four lines:—

"The curse of our island will be found in extremes,
In the practice of which misery's demon doth lurk
To prevent its true glory to shine, but in gleams;
They're the wallowing in wealth, and the wallowing in work."

There were other amounts upon the list representing the yearly pay of other officials of the State, varying from £8,000 down to £2,000, which was, I believe, the lowest sum paid to the class of servants which the writer mentioned. Every individual whose name was upon that list was chosen from the ranks composing the aristocracy or merchant and manufacturing princes, who make rapid fortunes out of the profits gained by the employment of the working man, whom they compel to work ten hours per day. Talking of princes, how oft, in this country, are we prone to laugh at those German princes and barons who, it is said, have very little more than the pay of a respectable engineer or Government clerk. What more should a prince or baron require than what would support him respectably? and what harm do these titles do, which are thought so absurd to ours? because, forsooth, the owners have not at their command enormous fortunes or whole tracts of country as estates, which our barons and princes, and dukes and earls, retain possession of, to the great detriment of thousands of their fellow beings. How much more absurd would it be to hear an Irish peasant, whose services were given to some great estate owner for the miserable sum of ninepence or tenpence per day, cry out to a German peasant much better off—"You have no real princes or barons in your country, for those who claim such titles are only in the receipt of a few pounds in the year to support them, while we are so off-handed and decent we allow our dukes and lords plenty of money to support theirs!" How much more absurd is such a boast when he who makes it is half starved and half naked into the bargain? But such is the boast which is put into his mouth by those who laugh in their sleeve while he makes it, and who, without a feeling of remorse, pockets the enormous sums which I have named, and that he who is blinded by such folly mainly contributes to supply. "And these amounts," says the writer in the *Gazette*, concluding his statement, "are scarcely enough to uphold the dignity and honour of the position of each." This is a gentle hint that they want a rise of wages, these State officers, which, if they persevere in demanding, who is to keep it from them? who is to lock *them* out, and employ "black sheep" and "knobsticks" to do the work? Nobody, for they have it all their own way, and mean to keep it so if we do not bestir ourselves.

The mention of "black sheep" and lock-outs brings me upon a vexed question, which I will just glance at before I conclude. It is that of trade societies. Those who object to their existence at all, do so upon the principle "Don't do as I do, but do as I tell you." They consider it presuming too far for working men to belong to organized friendly societies; yet, what is politics but a trade, and what, in consequence, is the Parliament but a trade society? The trade of governing is a very lucrative one, at least it would seem so, to judge by the scrambles which are made to secure a job in that particular calling. If the Parliament, in ruling the country, are assisted by local bodies, such as corporations of cities, towns, and boroughs, and if the members of these corporations belong to associations which are looked upon as honourable institutions, why not the working man have his society or institution? By doing so he is only following the example of those who are considered the patterns of what is right and proper. It appears to me that if the working men, by means of their societies, succeeded in conducting their own affairs, the occupation of their would-be supporters would be gone altogether. Some one must be in want of being shewn the right way to steer, but to judge by the differences in opinion that exist between the daily toiler and his friendly (?) supporters, the former will not be that one. He cries, and well he may cry, 'save me from such friends,'—friends who would always like to keep him on the dissecting table as a study for their pupils. They have been to college themselves, where they have filled their heads with so much of other men's brains that they left no room for an idea of their own to develop itself; when they do hear an original idea they deem it erroneous unless they find it hinted at in Cicero or Plato; when a plain, practical truth, in keeping with the spirit of the present day, is laid before them, they put it aside with an affected pooh, pooh. Is there a trade society in the kingdom that would not hold a jubilee and a thanksgiving for a reduction of the hours of labour? How many hearts would it make glad? how many thousands would it make happy and contented? Surely the millions connected with trade societies throughout the kingdom cannot be all wrong; let them be questioned as to their opinions regarding the working of a compulsory Education Bill, and their answer will be—*reduce the hours of labour*, and we will educate ourselves and our children without compulsion.

THE ANTIQUITY OF THE IRISH ROUND TOWER.

IN a recent number of the IRISH BUILDER I have given some notices upon the Round Tower of St. Michael le Pole, Sheepe-street, Dublin; with the present number the proprietor is enabled to give an illustration thereof, copied from a tracing taken from an original drawing by Beranger, as described in note, p. 274 of this journal. In the above-mentioned paper I adduced some facts tending to shew that these interesting relics of a past age are of much more ancient date than a great number of modern writers are disposed to allow. One reason, and I believe the principal one, they give is, that the use of mortar[*] in building was unknown previous to Christianity. From this we infer that erections of stone did exist, but that they were after the fashion of the fence walls we still see so plentifully scattered over the counties of Galway and Westmeath. That a building of any height corresponding with the least of our now existing round towers could be thus raised, even if the interstices were well plastered with mud, I am free to admit as an impossibility. Christianity was introduced into Ireland in the fifth century, and how are we to reconcile the above opinion with the following, which we find in the Ulster Annals at the year 448?—"A terrible earthquake was felt in various parts, by which fifty-seven towers were destroyed or injured." Whether these were veritable round towers or not, the annalists do not mention; evidently they were built of stone, and, to be denominated towers, they must have been of more imposing height than our primitive fence walls.

It is a singular fact, which I give, as opposed to the theory of their erection from 650 to 950, that in the twelfth century, when English domination in Ireland commenced, these towers should have been considered as ancient. This we have upon the authority of Giraldus Cambrensis; and it is still more strange that so accurate a writer, who so circumstantially describes them, should be unable to tell their original uses, shewing thereby that as generation succeeded generation in the divine teachings of the Christian faith, their former purposes being abandoned, their history was lost even to tradition; and it is no great stretch of imagination to say that, when an entire people became converted, and the rites of their former faith falling into disuetude, even allusion to these rites would be in a measure prohibited, although it might be impossible to eradicate entirely names and long-established customs, and that thus the original uses of these towers would be obliterated in the history of succeeding time. Now it is remarkable that the first founding of nearly every church in Ireland can be traced with an approach to accuracy, and would it not be reasonable to suppose that if the towers were built in connexion with them, some record thereof would exist? and would it not be next to impossible, if they dated from the seventh till the tenth century, the absence of such could have occurred? We have it upon too many authorities to leave room for doubt, that fire-worship, in one or other form, did exist in Ireland previous to Christianity; whether it afterwards became part of Druidical worship, or whence it originated, I am not sufficiently versed in ethnical doctrines to discover; but it is of consequence to remark that amongst the peasantry in many parts of Ireland, particularly in the south and south-west, although entirely ignorant of the former uses of these towers, they are called *cillcagh*—a name which sufficiently indicates a heathen origin, *cill* signifying temple, and *aghh*, fire. Again, I find in the Annals of the Four Masters, referring to the tower of Innis Cailtre, on the Shannon, in the year 898, "it is called *Turraghgan angcoire*." Now the word Turraghgan literally means fire tower, the addenda *angcoire* I presume signifies its being appropriated to anchoritical uses at a subsequent period.

In my previous remarks I alluded to the tenacity with which all converts cling to the customs of their previous faith. In this particular, even at the present day, the modern missionary labours under one of his greatest disadvantages, and it often occurs they are obliged to feign ignorance of the heathenish proclivities still manifested by neophytes, trusting that as they become better informed upon the divine teachings of the gospel they will gradually resign them.

Referring to the difficulties which here arise, and as shewing the manner in which names and customs can be perpetuated, although their origin has been completely lost, I give the following. An exceedingly harmless instance occurs in connexion with our national emblem, which is known to have been held in mystical reverence by the Pagan Irish, as deriving their religion from Oriental sources. There is a popular notion that when St. Patrick was preaching the doctrine of the Trinity, he used this plant as a symbol to illustrate the great mystery, but it is a curious coincidence that the trefoil in Arabic is called *shamrakh*, and was held sacred in eastern countries, in remembrance of the Persian triads. And again, St. Brigid, the daughter of an Irish prince (imbued in her childhood with all the elements of the Pagan faith of her ancestors), became one of the earliest converts, and it is said she received the veil from the hands of St. Patrick himself. History tells us she founded a convent at Kildare in the year 484, and here she preserved the so-called inextinguishable fire[*] of her forefathers, in commemoration of her own vow of celibacy. Perhaps she was permitted by the disciples of the great missionary thus to do because in the old law fire was used as a propitiatory sacrifice, and became a symbol in divine worship without being made an object of veneration; this we see in the seven lamps which Josephus tells us were kept burning in the Jewish temple, and reasoning from analogy they possibly considered it could not be displeasing to the Almighty, because we find in Leviticus vi. 13 these words—"This is the perpetual fire which shall never go out on the altar." The remains of a building called the fire-house was until lately, and may probably still be distinguishable, near the ruins of the cathedral, and at no great distance from the celebrated round tower. The name *cillcagh* thus bears remarkable significance as pointing to the conclusion that round towers were in some way or another connected with the mysterious rites celebrated in honour of the god Bel or Baal, or fire-worship in other form. It is strange how long this custom, curious as it now appears, was allowed to continue. In 1220, from the Annals of the Four Masters, I find that "Henry De Loundres, Archbishop of Dublin, put out the fire said to be inextinguishable, of which Cambrensis makes mention as having been instituted in the nature of the vestal rite by St. Brigid, and so preserved." It was again renewed, as is indicated by the same authority, referring to 1395:—"The king commanded Robert De Clayton, clerk, to grant letters of protection to the prioress and convent of St. Brigid of the fire-house of Kildare, without any charge for same."

I have possibly digressed too far in these remarks, but my object has been to shew how the appellation *cillcagh* may have been perpetuated in remembrance of the peasantry. There is another term by which possibly these towers are better known, *cloictheagh*, which signifies house of the bell, and we have it upon authority that several of them were used for this purpose; but it would appear most unlikely this was what they were originally constructed for, because there were no sufficient apertures to emit sound; and, further, that no bell which would be heard at any distance could be swung in them, possibly the few which may have been so hung were sounded by a rope attached to the clapper. Bells were invented at a very early date by Bishop Paulinus, of Campagnia, A.D. 400, and must have been well known at the dates which the advocates of the Christian erection of these towers give. The tower never appears to have been built for the bell, but the bell seems to have been afterwards adapted for use in the tower. If the advocates of the bell theory were correct, would it not be likely that the builders would have designed them accordingly, or why would square towers be built close to them, as occurs in several instances? The almost absurd argument of their being depositories of treasure or places of retreat in case of an invading force, or built for "defence, protection, and security," appears to be ridiculous. If any of these purposes were intended, why should they stand isolated? Would it not be a necessity that a ready means of access would be available from the neighbouring church without the use of a ladder? and is it to be supposed a hostile force would not be provided with scaling ladders in abundance? I would certainly have great commiseration for those who retreated into a round tower under such circumstances, and without any possible means of defence, surrounded by an attacking foe.

Considering all these matters in detail, I am inclined to the conclusion that these towers were in some way connected with the worship of the sun or of fire, their shape being typical of a sun-ray pointing heavenward, and therefore that they are of more ancient date than several modern writers will allow. Generally believed, from the difference of their style of masonry, to have been buil at various but still very remote periods, extending over two, or perhaps three, centuries, the story of their origin, shrouded in mystery and long and irretrievably lost to the page of

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[*] Generally speaking, the mortar used in the construction of the round towers has been fully converted into carbonate of lime, and is nearly as hard as the stone used in them.

[*] The English language, which it is more than probable is destined to endure unto the end of time, perpetuates numerous records of Anglo-Saxon idolatrous worship, amongst which may be enumerated the names of days as preserved in the calendar, while the people themselves unconsciously contribute to the continuation of its superstitious rites in the ceremonial of burning the yule log, suspending the mistletoe bough, and many other practices derived from the same source. Influenced by the idea that the work of Christianity might be thereby advanced, it was perhaps judicious policy of Pope Gregory, when commissioning Augustine to the conversion of England, to inculcate upon him the necessity of tolerating Pagan customs so far as they were not incompatible with the religion of the gospel, "for," he says in his instructions, "it is impossible to cut away absolutely from hard and rough minds all their old habits and customs: he who wishes to reach the highest place must do so step by step and not by jumps." These instructions will, in name at least, preserve mementoes of Anglo-Saxon idolatrous worship to all future time. St Brigid's fire has long since died out; not so, however, with the huge fires originally instituted in honour of the god Thor, and still perpetuated all over the country parts of England in the ceremonial attendant upon the burning of the yule log at Christmas.

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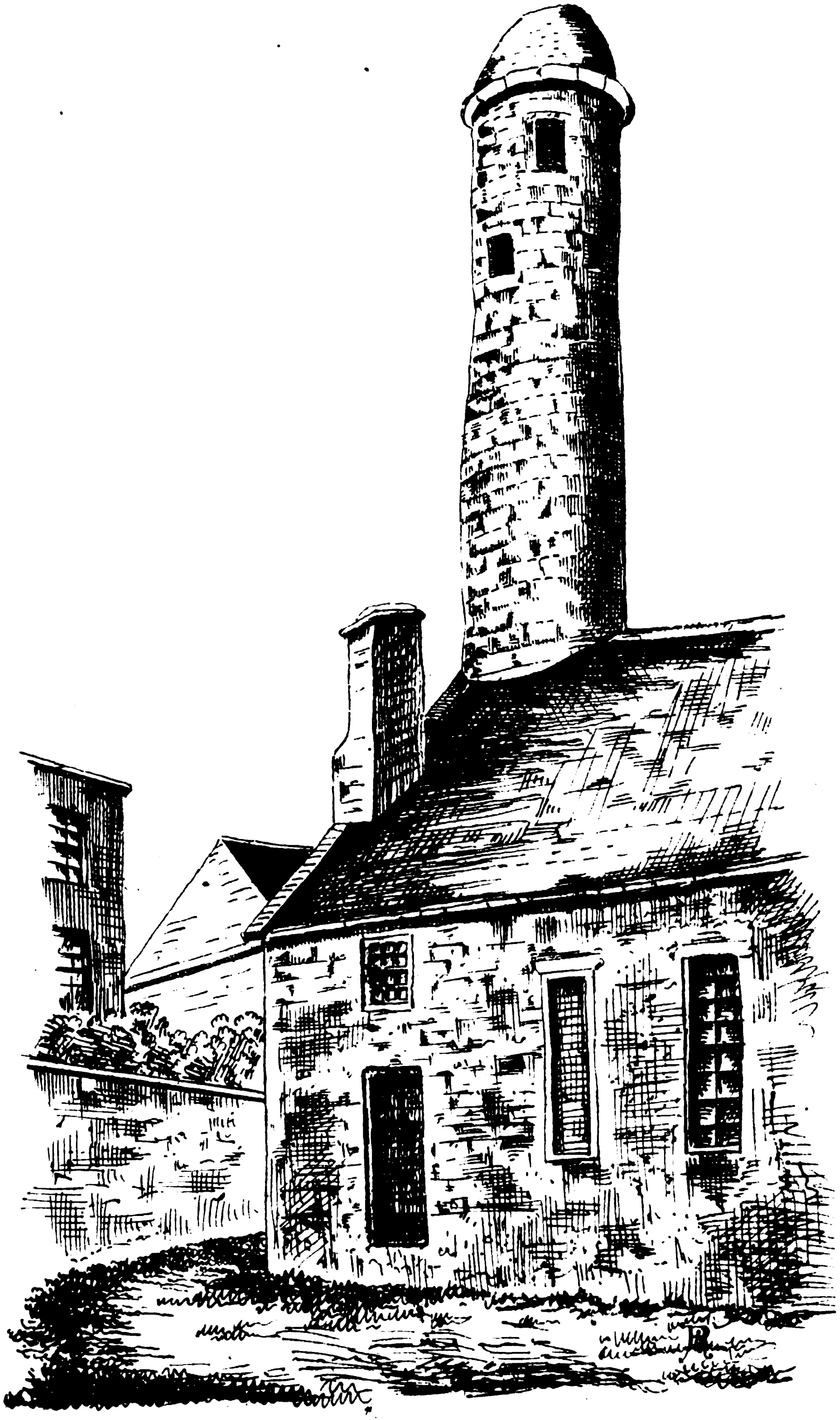
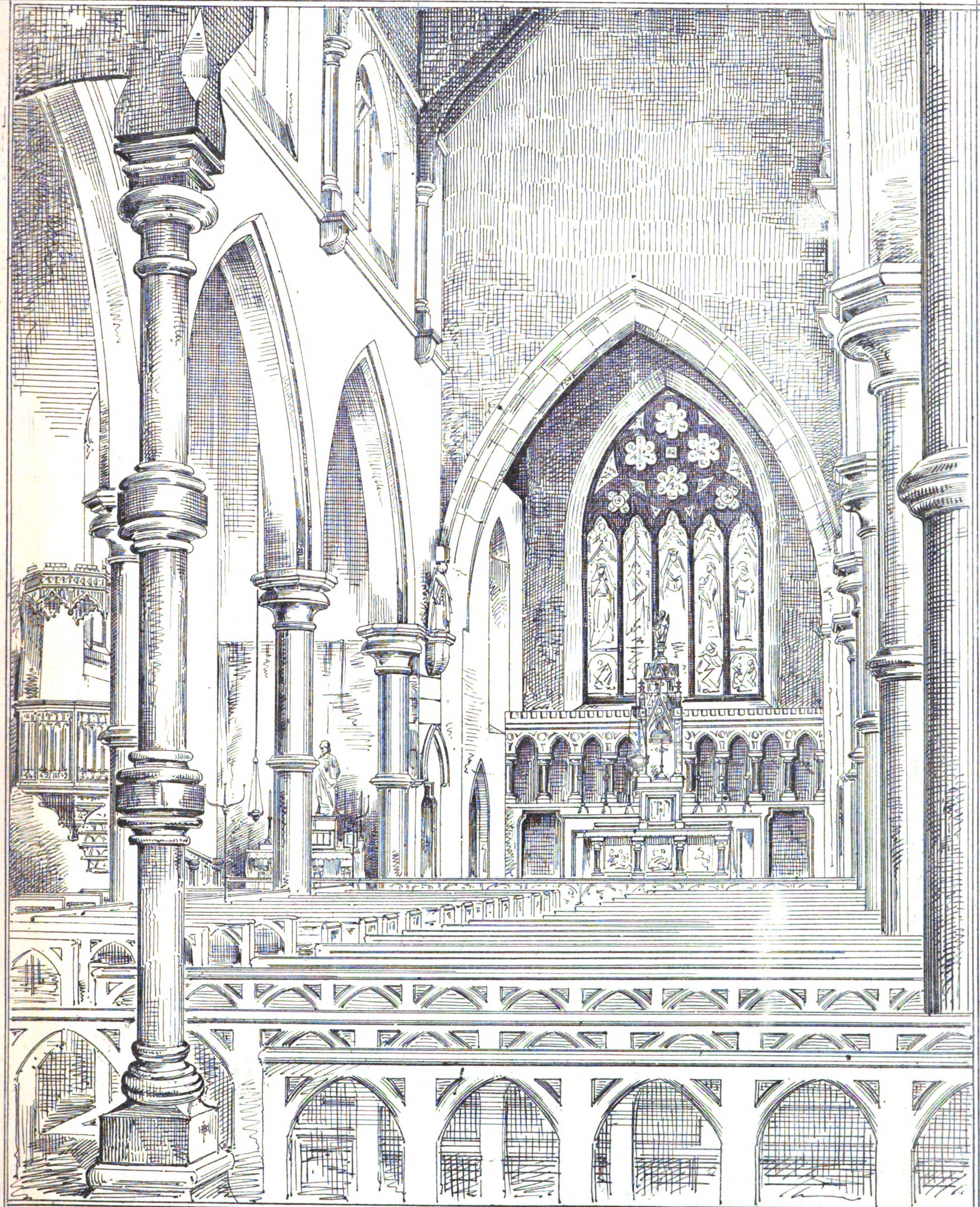


THE ROUND TOWER OF ST MICHAEL LE POLE
COPIED FROM AN ORIGINAL DRAWING
by Beranger

The Irish Builder Nº 264. Decr 15·1870.



St. Saviour's Dominican Church : Limerick · Messrs. Goldie & Child Archts.

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history,—admitted upon all sides to have been from the beginning in one way or the other in connection with the religious belief of the Irish people, and allowed by the advocates of their Christian origin to have stood upon an average for at least one thousand years,—there is a strange and perhaps a melancholy pleasure in the endeavour to trace them back to their foundation, as summoning up silent witnesses of scenes the actors in which long, long ages ago have crumbled into dust; scenes of the most eventful changes in the page of our national history, acknowledged to have been, at least for a period, associated with hallowed shrines devoted to the divine teachings of Christianity and literature, and withstanding the ravages of time, and the unholy havoc of fire and sword, which carried desolation to the peaceful retreats of ecclesiastical grandeur, by which they were surrounded,—they insensibly bring the mind back with a species of reverential awe to almost forgotten periods of the past, and teach it intuitively to declare homage to the skill of the builders of these primitive ages, for such they were undoubtedly erected in, even allowing for the occasion the Christian theory of their erection to be correct.

William Hughes.

ST. SAVIOUR'S CHURCH, LIMERICK.

This sacred edifice (of which we give an interior view with this number) was re-opened on the 13th ult. for divine worship. It has been completely remodelled, from plans by, and under the direction of, Messrs. Goldie and Child, architects, of London. We print nearly verbatim an account furnished to us by a valued correspondent and subscriber:—

For several months past, works of an important character have been in progress at this building, and the result has been the production of a church which reflects the highest credit on all concerned in the undertaking—one of considerable difficulty, and at first beset with obstacles. Few, indeed, who remember the old squat, weather-beaten exterior, with its incongruous battlements and pinnacles, could recognise through the wonderful metamorphosis wrought on it the beautiful proportions and picturesque outline of the present façade, with its lofty pointed centre gable, pierced with an elaborate rose window, and decorated with statue niches; its dependant sloping half gables, cut off and flanked by buttresses, which are carried up and terminated by massive yet graceful pinnacles, which give the entire front a finished and *recherché* appearance.

It is, however, on entering the building that one whose memory had been familiar with the old lank wooden uprights that did duty for columns, and stayed the plain, flat, gloomy, overhanging ceiling, that rested, as it were, on the apex of the chancel arch at one end (dwarfing its beautiful proportions) and swamped the organ at the other; then the large awkward gallery and its bulks of staircases, that darkened so much the west end of church, and the unsuitable arrangement of the floor, particularly that portion frequented by the poorer classes;—it is to one, then, who can remember or imagine all this, that the streaming light now falling on the beautiful and costly materials, and displaying in its varied depths of light and shade the elegant and chaste proportions of the present interior, that its production from the old building seems truly marvellous—so much so, that it is some moments before one draws near to examine those massive and matchless gleaming Aberdeen red granite columns which support the arcade, and divide the church into nave and aisles. They are each of two single pieces, resting on a molded base of Portland stone, which overlays an octagonal block of pure white native limestone; then at mid-height an ornamental band is introduced, and crowning all is an elaborately-molded cap, also of Portland stone. From off this cap—at either side making five bays—spring the gracefully-molded arches of the arcade, over the apices of which are the clerestory windows—simple coupled lights deeply recessed, with light pointed drop-arches in front. From the foot of those windows, sloping downwards and outwards, are the aisle roofs, whose graceful design, curved ribbed principals resting on corbels, the entire surface being sheeted over, and without substantially slated, whilst within it is broken up into panels, whose rich and warm tone produced by its permanent oil stain, and the cathedral proportions of those side chapels, make them a study in themselves, and well worthy of the universal admiration they have exacted. But the nave roof is the *chef d'œuvre*, and one *must* see before he can appreciate those slender columns, resting on corbelled bases, and supporting molded caps, from off which spring the legs and curved ribs of the main trusses; then the intermediate principals and massive purlins break up the open sheeted surface, as in aisle roofs; and the delighted eye, as it gradually steals up to the distant apex—now deepened in shade,—is lost in the solemn and thrilling effect which has been produced. A most unique, light, and elegant organ tribune of wrought and stained and varnished red pine, supported by pierced and carved oak columns, happily replaces the old gallery before alluded to, and occupies such little space at the west end of church as not to interfere with a single feature of the interior, but, on the contrary, adds much by its beauty. On this the grand old organ is fixed, whose rich tones are now heard to so much advantage. Then, above and beyond all, one is struck by the internal appearance of the rose window (which developes in its tracery a cross, the angular and other spaces being filled up with trefoils, quatrefoils, &c.), which so appropriately lights and furnishes that intermediate storey. In the corresponding space between the apex of chancel arch and framing of roof, preparation has been made for the introduction of rood figures, which will tend considerably to enliven this portion of the church. Evident care has been bestowed on the arrangement of the seats, &c. Now the principal entrance is by the great west doorway, which opens on the uninterrupted sweeping nave, the beautiful encaustic tiled passage through which leads direct to the communion rail; and then at either side are the benches or seats. The aisles are similarly treated, the passages being along side walls, by which means the greatest amount of accommodation is obtained, and a simplicity of access established, which is so essential in all public buildings.

The acoustic properties of the church are very perfect, as also the ventilation. In the north aisle a large radiating stove has been erected. Thus much has been accomplished; but, in order to give the last stroke to this already beautiful church, the erection of a triple porch advancing some 14 ft. or 15 ft. in front, is deemed a matter of necessity.

We understand that the greatest meed of praise in carrying out this noble undertaking is due to the Very Rev. J. Carbery, Prior of the Dominican Order, under whose charge the religious establishment connected therewith is maintained. We are glad to hear that all liabilities so far are cleared off—much to the credit of Limerick.

Mr. M. A. Hennessy, C.E., of Upper Mallow-street, Limerick, had the entire supervision of the works from their commencement until their satisfactory completion by the contractors, Messrs. M'Carthy and Guerin.

LAW.

SECOND QUEEN'S BENCH.—Dec. 1.

(Before Mr. Justice O'Brien and a Common Jury.)

Begg v. *Redmond*.—This was an action brought for alleged trespass. Plaintiff is a fishmonger, and defendant a fruit and vegetable dealer, and they both carry on business at the premises 43 Westland-row, one-half of which is occupied by plaintiff, and the other by defendant. Their stalls adjoin each other. About nine years ago plaintiff began to deal in fruit, and defendant began to deal in fish, but after a little while they both gave up their new trades, and devoted themselves exclusively to their old ones. In course of time plaintiff tiled the portion of the pathway fronting his house, and as the effect was to throw the rain upon defendant's portion, he tiled his also to prevent it. Plaintiff complained that defendant caused his cabbages to overhang his (plaintiff's) salmon! while defendant, on the other hand, felt aggrieved that plaintiff should place his fish against his (defendant's) peaches! Finally, about three weeks ago, defendant commenced again to take up the fish business in addition to his fruit, whereupon plaintiff at once resumed the fruit business as an adjunct to his fish! In this state of feeling between the parties, plaintiff, in October, proceeded to lay down, in the centre between the two portions of footway, a base for railings; but on the complaint of defendant to the landlord (Mr. Ryan, of Townsend-street), Mr. Ryan would not permit the railings to be erected, as being an obstruction to defendant's business. Defendant then removed the stones which were to form the base, from the position in which they lay on his portion of the frontage, and placed them close to plaintiff's door. Plaintiff, regarding this as a trespass on his property and an infringement of his rights, brought the present action. His case was that there had been no prohibition of the stones by the landlord, and that they were lying on his portion of the frontage when defendant took them up and removed them. After a lengthened hearing an arrangement was come to between the parties.

SECOND QUEEN'S BENCH.—Dec. 9.

(Before Mr. Justice George and a Special Jury.)

A. and N. Hammond v. *Captain Ralph Smyth*.—Plaintiffs are builders at Drogheda, and defendant is a gentleman residing at Newtown, near same place. The action was brought to recover £552 5s., amount due for building work executed at defendant's residence. Defendant pleaded that plaintiffs were bound by their agreement to have their works completed by 1st June, 1868, under a penalty of £10 per week for any further delay; that the works were not completed for twenty-eight weeks after, and that plaintiffs, therefore, were indebted to him for penalties to the amount of £280; that he was willing to set off this against plaintiffs' demand, and that the only sum actually due to them was £156 17s. 6½d., which he had tendered before the commencement of the action, and which he now brought into the court. Plaintiffs filed a replication, alleging that defendant employed an architect, and that it was part of the agreement between them that the plaintiffs should act in strict accordance with the architect's plans and directions; that the architect (Mr. Caldbeck) furnished them with further details and plans, the execution of which necessarily prolonged the work beyond the 1st of June, 1868. After the case had been opened it was agreed to refer both the law and the facts thereof to the arbitration of three of the jurors. Their award had not been declared at the time of our going to press.

No mode of payment can be fair which overlooks the previous training of the workman. Sir Joshua Reynolds was once asked by a person for whom he had painted a small picture, how he could charge so much for a work which only employed him for five days? "Five days!" replied Sir Joshua, "why I have expended the work of thirty-five years upon it."

CONSTRUCTION OF METAL AND TIMBER ARCHES.

The following paper was read on the 6th inst. before the Institution of Civil Engineers, London, by M. Jules Gaudard, of Lausanne. (Translated from the French by Mr. W. Pole, F.R.S., C.E.) It has been kindly forwarded to us by the secretary for publication in our journal.

Elastic arches supporting a road or railway were connected to the horizontal platform by pillars and filling pieces, occupying the spandrels. The office of these parts was to transmit the load of the platform to the resisting arch; no other function was usually attributed to them, and the arch was the important member on which the whole rested. The spandrel, however, forming always a rigid filling or system, contributed powerfully to increase the resistance of the structure, so that it would be justifiable to consider as the chief member, not the isolated arch but the framework, more or less complex, constituted by the arch, the spandrel filling, and the longitudinal horizontal piece placed at the level of the platform. Under this point of view, the arch might be assimilated to a chain of articulated segments, presenting two modes of calculation which were severally examined.

In the articulated system it was necessary to choose a single triangulation, where every piece was essential; for otherwise, if, for example, two diagonals were introduced in each bay, the calculation would become indeterminate. At the summit, the two half-spans were joined by a simple point of articulation, like those of the other summits of the triangulation, while the longitudinal horizontal piece was useless in theory; and in practice it would be desirable to provide it with a free sliding joint, in order that nothing might impede the expansion of the fixed portion. Under these conditions, the elements of statics furnished easily the stresses on all the pieces, of which an example was given. When the stresses in the various parts of the arch or of the longitudinal were known, the stresses in the spandrel bars could be deduced by simple graphic decompositions, based on the equilibrium of the summits of the system. Of this also an example was given, with further calculations.

For a determined fixed load there might be given to the arch the form of a funicular polygon, a figure of equilibrium such that the articulated chain might maintain itself in position without the intervention of the other pieces of the framework. In a bridge the load varied, but it was desirable the figure of the arch should approach that of equilibrium corresponding to the complete load. This form would be the curve called the catenary for an arch of uniform section carrying only its own weight, and the parabola for an arch loaded uniformly per unit of length on a horizontal line. This latter was the case in suspension bridges, and also in bridges with compressed metallic arches, for the weight of the arch and the spandrels had but little influence, proportionately to that of the horizontal platform and its test load.

The second mode of calculation referred to Rigid Arches, and consisted in restricting the spandrels to simple supports for transmitting the loads. The arch was then more strained, and ought to be rigid, for the funicular form only gave an instable equlibrium, corresponding to a particular state of the load. As soon as this state was changed, the arch no longer suffered simple compression, but was disposed to bend, *i.e.*, to change its figure.

In an arch of masonry, the effect of the mortar was neglected, and the voussoirs were regarded as blocks placed in juxtaposition without adherence, having the power of pivoting one on the other, round the edge either of the intrados or of the extrados; that was what was called a system of alternative articulation. The centre of pressures, *i.e.*, the point of application of the resultant of the elementary reactions of the joint, was considered for each joint. The locus of these centres, or the curve of pressures, ought not to pass outside the thickness of the arch, or the pivoting of certain of the voussoirs would take place; the curve ought even to keep within a zone more limited than that of the arch, for fear of endangering the crushing of the stones.

An elastic arch was subject to other conditions. If the connection was very good, as was (or ought to be) the case with plate iron, the arch formed an entire piece, suitable to resist both tension and compression. If it was treated as an arch by the curve of pressures, this curve would no longer be required to remain within the arch. When the arch rested upon the abutments by an extended sustaining surface, being keyed by a range of wedges, there was nothing to prevent certain of these wedges being driven tighter than others. This would then modify the point of concentration of the thrust upon the abutment, and consequently also all the other points of the curve of pressures. Hence arose the uncertainty which generally attended the method of the curve of pressures, these pressures only being determined by arbitrary data in regard to the original keying-up, or the yielding of the materials.

The author considered the proposal to provide a metallic arch with three pivots, or hinges, one at the summit, the other two at the supports; but hitherto, so far as he was aware, no one had ventured to apply three pivots to large works. M. Mantion had, however, employed two pivots at the supports in an iron bridge of the St. Denis canal, and the effect of such a system was examined.

The theoretical calculations of deformation might be applied with confidence, where the arches consisted of a single piece of homogeneous metal. Arches in solid wrought-iron plate might be considered to belong to this category, the metal having been well worked, and the connections being as solid as the continuous parts. The theory of these arches had been the object of the researches of M. Bélanger, and subsequently of M. Bresse, who had entered into great detail respecting them in his Treatise on Applied Mechanics (Stabilité des Constructions). An explanation of his principal formulæ was then given.

The author next proceeded to consider the details of construction of arches of different materials. He remarked that, structures in timber were the most economical in many countries, but their durability was limited. The principal type of timber arches appeared to be that inaugurated at Yvry (Seine) by M. Emery, where the arches were composed of strong pieces of carpentry superposed to the number of three, for example. But it was preferred in many cases to leave open the intervals between the several pieces, in order to allow better ventilation, and to prevent them from heating; and further, because this plan gave an increase of depth to the arch, and consequently a more ample field to the oscillations of the curve of pressures. Certain timber bridges presented a compressed arch, a tensile tie-bar, and vertical connecting-rods, a system which was allied to the bowstring form. The flat arches of Wiebeking (Bavaria), and those in thin layers of planks superposed of Emy, would appear only suitable for roofing purposes, being too subject to deformation for bridges. Among the American forms of trellis framework for straight beams, capable of competing with arched openings, the system of Howe, having iron vertical tie-rods, deserved special mention.

Cast iron resisted compression well, but tension badly. It made good arches in the cases where the curve of pressures did not pass out of a certain central zone, and where the flexure was nothing, or insensible; and on the condition that there were no powerful vibrations, *i.e.*, that the dead weight was large compared to the moving load. This last consideration led, in the case of railways, to the spreading of a thick layer of ballast on the platform, in spite of the increase of load resulting therefrom.

Wrought iron was preferable to cast iron, notwithstanding its higher price, whenever there was reason to fear the effects of flexure in certain parts, or when it was desired to make a light structure, without loading of ballast. There was also an opportunity of adopting pivoted supports, and of calculating the thrust according to the theoretical deformation. However, this conclusion was not absolutely true for trellised arches, which it was necessary to use in the case of very large spans. Such, for example, was the bridge at Coblenz over the Rhine, consisting of three arches, each 317 feet span. In general, a solid plate web was preferable to trellis work for arches of moderate dimensions. In effect, the flexure was small, and the longitudinal pressure much predominated; the solid plate acted, consequently, more usefully than in a straight beam, which presented neutral fibres. Moreover, it would only be necessary to employ rivets at considerable intervals in the parts outside the joints. To satisfy the most advantageous condition, viz., a large moment of inertia, without too great depth, it was desirable to adopt for the section a double T with large wings. For large openings, however, a box section appeared to be preferred. The lateral stiffness would depend essentially on the cross framing which connected together the different arch ribs of the same span. Where this resource was wanting, *i.e.*, where an isolated arch rib must maintain itself alone, the oval section, analogous to that of the arches of the bridge at Saltash, presented itself as one of the most favourable.

Wrought and cast iron might be associated in the same work. This combination had been adopted in a bridge of three arches constructed in the Park at Neuilly, near Paris, many details of which had been suggested by the new Westminster Bridge. All the pieces essentially under compression, *i.e.*, the spandrels and the portions of the arch near the abutments, had, for the sake of economy, been made of cast iron, while the central portion of the arches and the longitudinal bearers of the platform were of plate iron.

Arched bridges were, on principle, often more economical than those formed with girders; they admitted better of an augmentation of the dead weight, for the purpose of deadening the vibrations and increasing the probable durability. But it was necessary that sufficient height should be available, and that the abutments should be able to resist the thrust. When the work was low and the ground solid, it was easy to give the abutments the necessary stability, without too much expense. The compression, tending to close the molecules of the metal, appeared to promise to such works a longer duration than would be due to pieces in tension, which threatened, after a long period, to be subject to enervation. These considerations in favour of arched bridges were, it was true, somewhat counterbalanced by the greater complication of the forms.

Bow and string bridges were, as the words implied, arches provided with a tie-rod which received the thrust upon the extremities, with the intervention of supports; so that the abutments were freed from the effect of these thrusts, and only exerted reactions in a vertical direction. The most remarkable example was the bridge at Saltash, of two great spans of 456 feet each. The arch, being single, had to be kept at the two ends at the height above the roadway, necessary to leave a free passage for the trains; and this led the eminent designer, Mr. Brunel, to adopt a curved tie, and to suspend the platform at a lower level. When there were two arches, one on each side of the road, there was nothing to prevent their extremities descending to the level of the platform; the tie was then straight, and being strengthened in order to serve as a longitudinal bearer, it might support the roadway. An example of this disposition was the bridge of Audenarde, on the Scheldt.

In conclusion, the author referred to a work he had published in 1865, ('Etude comparative sur les Ponts en Fer') in which he had given formulæ expressing the stresses on the various parts of bow and string girders, as well as the comparison between this and other systems of construction.

The further discussion of the paper was postponed until next meeting of the institution.

THE "MODEL" WORKHOUSE, NEWTOWNLIMAVADY.

We (*Coleraine Chronicle*) had an opportunity recently of inspecting this establishment; and as we think its management reflects credit upon the officials, no less than upon the efficiency of the guardians, it may not be without a beneficial effect upon the authorities of neighbouring unions if we describe what we saw. The house itself, pleasantly situated south of the town, is built with a brownish-coloured stone, taken from a quarry distant about two miles, the window and door facings being of the hard brick for which the Dungiven works are celebrated. The masonry of the building has been most conscientiously constructed, and all parts of it is therefore entirely free from damp. The design of the establishment corresponds with that of workhouses generally, with this exception, that a cistern placed on the most elevated portion of the main building supplies a fountain which can be made to play with capital effect in the centre of a bit of garden ground between the lodge and the workhouse proper; the utilitarian aspect of the whole institution is consequently not a little relieved. Indeed, the system upon which the whole establishment is conducted partakes pleasantly of the æsthetic and the practical. Our visit to the school-room was agreeable in the extreme. We were surprised to find a harmonium, as one of the educational adjuncts, presided over by a blind girl, who seemed to find real enjoyment in the training of a class of boys and girls in the ennobling science so beautifully characterised as divine. The children sung several melodies in capital style, and were apparently highly delighted with the exercise. The alternation from music to farming is not exactly *facile descensus*, although agriculture has engaged the attention of the sweetest of our lyrical poets. It so happened, however, that our visit to the clean dining-hall of the workhouse occurred as the inmates were tripping in for their mid-day meal of soup and potatoes, every two able-bodied men getting a net of 7lb. between them, and a tin basin of excellent soup, which is, we should say, the production of beef and vegetables—the former being given as a relish four days in the week. Including two acres attached to the workhouse, and which are rent free, the area of the farm is 18 statute acres, held under Mr. King and Mr. Tyler, at the rate of £3 per acre. The profit to credit for the year ending 25th March last was £243 13s. 10d., a sum sufficient for the payment of the salaries (with rations) of all the in-door officers of the union. The rearing of pigs forms a principal source of revenue, the number on hands at present being no less than forty, the majority of which would weigh above two cwt. each. Some five acres of the farm were this year under potatoes, and the major portion of the ground so occupied is now under autumn sown wheat, the remainder being devoted to clover, grass, turnips, &c. There are three cows kept, which Mr. Meekin (master) states give an ample supply of new milk for all the inmates whose dietary includes that article—not so numerous, we were told, as in some other northern unions, Coleraine especially. The guardians keep a horse also for the work of the farm, and thus save a very expensive item of outlay. This is the more remarkable, as deceased paupers are buried within the workhouse grounds, and therefore the board might, as is done in other unions, hire a horse for the farm work. Economy seems to be the ruling passion with the guardians and their officers. The porter, who has been a long time in the service of the union, monopolises in his own person the functions of agriculturist, cook, and porter, and finds time to discharge his multiform duties admirably. The master, who has had for fifteen years the charge of the schools—male and female—so regulates the internal affairs of the workhouse as to keep it clear of tradesmen, except two regular hands who do all the jobbing required. He surprised us by proving that the pointing of the external walls of the building, and the painting of the wood and iron work of the house, had all been accomplished under his own superintendence by the pauper inmates—the whole being finished in such a workmanlike manner as to appear the result of the best skilled labour. The effect of all this well-directed management is discovered in the low average rates of the union, which is somewhere about 30 per cent. below the burthens borne by the ratepayers of other Ulster unions. The comparative immunity of the population of the union from sickness at the present time, and the fact that the guardians set their faces strenuously against the granting of out-door relief, may account for the difference in favour of the Newtownlimavady ratepayers from taxation. There are only seven patients in the infirmary and one in hospital of all ages, so that the more expensive classes of workhouse inmates are happily scarce in Newtownlimavady. Contrary to our expectations, the subject of the accommodation of night-lodgers did not come up at the last meeting of the board of guardians; but we believe that in this, as in other departments of the workhouse system, by a strict observance of the Poor Laws, and the rigid exercise of discipline, only those who are really destitute and who have no resource but the workhouse, and are willing to comply with the "test," seek relief, and thus enable the guardians to "keep down the rates."

THE ROYAL IRISH ACADEMY.

At the stated meeting of the Academy held on the 30th ult., the President, the Rev. Prof. Jellett, F.T.C.D., read the inaugural address, of which we print the following abstract:—

It was usual, during his term of office, that the president should lay before the members a statement of the condition and purpose of the Academy, endeavouring to mark the progress she had made in the several parts of her varied programme, and should there appear in any part of their field of labour a movement other than that of progress, directing there their most earnest attention with a view to arrest and remedy the evil. It was a custom not rendered in any way superfluous by the reports which from year to year were presented by the council—valuable and absolutely necessary as these reports were—for the function they had to discharge was different in at least one important respect. The purpose which the council in its annual report sought to fulfil was to note the changes which occurred during the preceding years, in order to direct immediate attention to any fault of their system. But it was not possible to form an adequate idea of the progress or decay of any great institution from observations extending over so short a time. The changes noted might be, to speak mathematically, changes of short periods, phenomena arising from some accidental cause which the succeeding year might arrest or reverse, and therefore not affording a true indication of the real progress of the institution or the intellectual activity of its members. But this defect might be supplied by the address of the president. In order to estimate rightly the condition of an institution like that, they should look beyond the institution itself. Without such an examination they might commit the serious mistake of attributing to their own merit a default that was really due to some one branch of science, for progress in each department was not, any more than success in individual labours, uniform or even consistent. In every such department there were periods of rapid advance and periods of almost stagnation—times when discoveries crowd upon them with a rapidity which was absolutely dazzling; or, on the other hand, they might take credit to themselves for successful labour when they were but sharing, and that unprofitably, in the general advance—swept onward by a stream which was really passing them by. He took, for example, how their meetings and records were adorned by the magnificent speculations of Professor M'Cullagh upon Physical Optics. The study of this science had not ceased: on the contrary, he had but to pronounce the word "spectroscope" to show that it had been more active than ever. Two departments of the Academy were necessarily progressive, at least in a certain sense of the word. They were continually adding objects of antiquarian interest to their museum—books and manuscripts to their library. Were they adding as they might—were they using them as they ought? As to the museum, he feared it was too certain that every year witnessed in Ireland the destruction of objects of great archæological interest—more especially objects in metal. Gold and silver ornaments were bought up from the finder by travelling hawkers, were sold by them to the silversmith, and so found their way to the melting-pot, and thus many most interesting relics of the olden time of Ireland had perished. The most strenuous efforts had been made, especially by their late president, to arrest this evil. The Crown was induced to waive its right in favour of the Academy. Parliament gave them an annual grant for the purchase of these articles, and the Academy was always ready to buy them at their full intrinsic value. Yet, from some unaccountable fatality, the finder, instead of sending them there, would often rather dispose of them to a hawker at a price, it is believed, very far below that which he might have obtained from the Academy. They had another class of rivals—the private collectors. They did not destroy the objects, nay, they often did good service by preserving them; but so far as the general student was concerned, they must be useless. No man would, or indeed could, make his house generally accessible for purposes of study. He was no true archæologist who kept private collections that he might look at them as ornaments—who regarded them with a kind of miserly love—very anxious to preserve them, not at all anxious to use them, perhaps unable to use them—exerting himself not to the benefit but the injury of archæology, by hindering such articles from falling into hands in which they might be made useful to mankind. Such a spirit might even creep in among the guardians of a national museum; he hoped and believed that it would never be found among them—for, bad anywhere, it would be wholly unpardonable there. They held their archæological treasures, not as owners, but in trust for archæology—in trust not to keep them unseen but to use them, and to allow others to use them for the benefit of archæological science.

The following letter in reply to the memorial presented by the Academy to Earl Granville, was read by the Secretary:—

I am directed by Earl Granville to acknowledge the receipt of the memorial of the Royal Irish Academy of the 14th inst., requesting that her Majesty's Government will use their influence in order to induce the belligerent powers to take every possible precaution to secure from the destruction with which they are threatened the scientific, literary, and artistic collections now existing in Paris, and I am to inform you in reply that Lord Granville has caused a copy of your memorial to be transmitted to her Majesty's Ambassador at Berlin for communication to the Prussian Government. T. Hammond.

CORRESPONDENCE.

[*It is to be distinctly understood that although we give place to letters of correspondents, we do not subscribe* editorially *to the opinions or statements set forth in same.*]

CARVED STONE EFFIGY.

TO THE EDITOR OF THE IRISH BUILDER.

Sir,—Having myself drawn the very curious caryatid-like sculpture engraved in your issue of Dec. 1st, by Mr. Geoghegan, I totally dissent from his estimate of its age. I believe it to date from the middle of the 15th century, and to be one of the curious class of sculptures called *sheela-na-gigs*, intended to attract the "evil eye," and so avert the injury from animate objects. There are several examples preserved in the Royal Irish Academy, and a very curious sculpture of this class may be seen *in situ* on the Castle of Kilkea, the admirably restored seat of the Marquis of Kildare. James Graves.

Inisnag, Stoneyford, 3rd Dec., 1870.

ARCHITECTURE IN A "TAP-ROOM".

TO THE EDITOR OF THE IRISH BUILDER.

Sir,—In the daily papers of last week an advertisement appeared setting forth the interior beauties of a public-house. The following extract eclipses all notions we might have had of the once celebrated George Robbins:—"There is sitting accommodation for fifty persons in the shop, independent of a large tap-room, separated from the bar by an elegantly-designed partition, with *Corinthian columns* supporting a frieze and cornice of the same *elegant order*; and the interior decorations, from the chaste design and superior workmanship, are well worthy of inspection." It follows visitors can, at the expense of a glass of Dublin stout or a gill of old malt whiskey, "inspect" examples worthy the ancient renown of Athens without the trouble of travelling or pondering over the old folios of Palladia. Times are altered, and should John Ruskin ever visit Dublin, and drop into the house so artistically decorated, he may find the *waiter* explaining the sharpness of outline in the exquisite foliage of the Corinthian capitals. Mr. Ruskin, as a matter of course, will feast his eyes on the "same elegant order," once the glory of Greece and Rome, now quite common in Dublin City. J. K.

Gorey, 6th Dec., 1870.

MACADAMISING STONE.

TO THE EDITOR OF THE IRISH BUILDER.

Sir,—The debate at the meeting of the Corporation on the state of the streets of Dublin leaves some hope that the members of that body are now cognisant of a fact apparent to all visitors—that there is no city in the kingdom where the state of the streets is so bad as in the metropolis of Ireland.

Will you allow me to urge on those who have the management of the cleansing and paving the streets in their hands that, as long as the blue limestone of the neighbourhood is used for "road-metal," it will be impossible to have the streets free from mud in winter, and dust in summer.

The limestone generally employed for road material is unfit for this purpose where there is much traffic. It is soon ground to dust, and also decomposes. Owing to this, the quantity of mud which is produced by the traffic in Dublin is much greater than would be the case if proper stone were employed. Granite, sandstone, and largely crystalline "trap" rocks are also unsuitable for the purpose of road material.

The best kind of rocks for mending roads are the "greenstones," or diorites, and some of the allied varieties of "trap," or plutonic rocks. These are of a tough and hard character, not liable to decomposition, and would probably form a compacted layer if spread upon a firm foundation. Such rocks are extensively used in parts of England, even when they require to be carried by rail or water from long distances, because it is found cheaper in the end to pay somewhat more for a hard and tough stone than to make use of soft stone from a neigbouring quarry.

The case is similar to that of using steel instead of wrought-iron rails. Bessemer steel rails are probably (I write only from memory) twice the cost of iron rails, but they have been found to last six times as long as the latter; and where the traffic is great the advantage of their use has been fully proved.

The rocks which would yield the best kinds of road material are to be found at some distance both to the north and to the south of Dublin, and could be brought into the city by rail or water. They would stand the wear and tear at least twice the length of time of the limestone, and the result would be that one half of the cost and labour of removal in a state of mud would be saved, while the streets would be more easily kept clean than at present. Edward Hull.

Geological Survey Office.
6th Dec., 1870.

STEAM TRACTION ENGINES.

The *Standard* has an article on a trial of steam traction engines on a road at Lincoln, from which it appears that the most perfect of the improved class of road engines, with vertical boilers and wheels covered with Thompson's indiarubber flanges, is the "Advance," just completed for the war department, by Messrs. Robey and Co. The dimensions of the "Advance" are 13 feet 6 inches in length, by 7 feet 2 inches broad to outside of wheels. Weight 6¼ tons, carrying a load of water and coals of 2¾ tons. Total weight, 9 tons. Twelve horse-power. Cylinders, 7¾ inches diameter. The driving wheel 6 feet diameter. Worked by pinion gear. Revolutions at fast speed, 200 per minute. Hauling power, 17 tons up one in 12; 30 tons up one in 30. The "Advance" was tested up and down hill and on the level under the most trying circumstances, and completely satisfied all scientific persons of the adaptability of such engines to road traffic. In making a circle through soft ground, and in a hollow 10 inches deep in 7 feet of length, one wheel sinking into the soil 5 inches below this; and yet there was no arrest, not even instataneous, in the progress of the engine. A speed of nine miles an hour upon such ground as this is a wonderful accomplishment, and the steadiness with which the "Advance" worked upon ground of the most uneven nature shows clearly the great value of these machines for the roughest locomotive work.

AN ARCHITECT'S HOLIDAY NOTES IN IRELAND.

We subjoin portions of a paper which appeared in a recent number of a London contemporary entitled "*The Architect*," from the pen of Mr. Robert W. Edis, architect, F.S.A. The author describes graphically what he saw during "a short but pleasant tour" in Old Ireland. It is gratifying to hear that he was not disappointed with his flying visit; he winds up his narrative with a strong recommendation to all architectural students and others to visit without delay "a country so full of interesting antiquarian and architectural remains." (Reader, note that the italics are *ours*.)

Circumstances which are self-evident prevented us this year taking our annual sketching holiday on the Continent, while other circumstances, which it is unecessary to name, decided us on visiting the west of Ireland; so on a bright morning, early in August last, we found ourselves speeding on our way westward in the "Wild Irishman," and in less than twelve hours were in the metropolis of the sister Isle. Our journey from London to Dublin needs no description, for is it not written in the book of "Murray"? but even in these days of luxury and comfort, a word of praise may be given to the excellent line of steamers that ply between Holyhead and Kingstown with such undeviating quickness and punctuality; and it was with pleasant feelings that we found ourselves on board Her Majesty's good mail ship "Ulster," fast steaming through the Race of Holyhead, and in a few short hours looking upon, for the first time, the magnificent panorama of the Wicklow Mountains and the Bay of Dublin.

The first impression of Dublin was *ghastly in the extreme*,—streets whose chief characteristic was certainly not artistic, and buildings in which art as architecture, as a rule, seemed to have no place; yet here and there were some good modern buildings, showing that our fellow-artists in the sister metropolis are striving in the right direction. Amongst these we would especially note,—the new Kildare-street Club, by Messrs. Deane and Woodward; the new Crown Life Office by, we believe, the same architects, in each of which there is much of good, both in design and detail; but we regret that these clever artists should have chosen for the latter building a style—pseudo-Venetian—so totally unsuited to the country; in the new Museum of Trinity College we have good art thoroughly and decently carried out, and there is also much good work in the new western front of the church of St. Anne's, in Dawson-st., and in the large new building opposite the Bank of Ireland. Generally, however, throughout this city there appeared to us *a dreary monotony of red brick and commonplace*, and the once beautiful Liffey, with its tributary sewery streams running into it, not only looked but smelt like *a large open sewer;* but, perhaps, we were fastidious, for we hear that some of the members of that most honourable body, the Town Council, are not quite decided as to its being *a common sewer or a bed of roses!*

In the above short paragraph our visitor disposes of the Irish metropolis after, we presume, an hour's run with a jarvey on an "outside." We find him next (provided with an excursion ticket?) "hurrying onwards" per G.S.W.R., and he tells us that in "the county town of Limerick" he fails to find the "beauties" (feminine, we guess) about whom he had *heard so much*, but concludes (erroneously) that they are "a thing of the past." He reaches the village of Pallas, and describes some ruins and a castle about a mile to the westward. The noble castle of the Earl of Limerick attracts his attention, and he says:—

Within a short distance of this castle (Shan Pallas), on a wooded eminence, commanding most lovely views of the surrounding country, and looking right up the valley of the Shannon, stands what at first sight seems to be an old feudal castle towering up above everything and eminently adapted for defence on all sides. This is, however, no ancient building, but the new castle of the Earl of Limerick, who, with laudable intention, has built himself a residence in the midst of his tenantry. Approached by a winding road, along the edge of the picturesquely wooded height, through a narrow postern on the western side we enter a courtyard, round the south and east sides of which are the embattled walls in which we noticed especially the boldly pierced Irish merlons. At the south-east corner is a small guard-tower. On the west side is the chaplain's tower, containing kitchen, living and bed-room, with complete arrangements for separate maintenance, and the great banqueting hall. On the north side of the quadrangle is the main portion of the castle, while over the gateway is placed the chapel, approached direct from the main staircase, and containing high up on the north side a small recessed gallery for the sick. On going over the building we were eminently impressed with the exceeding completeness and harmony of every part of it. Internally every accommodation and modern convenience, while externally the grouping of the whole building was quite in keeping with the scenery around, and while looking thoroughly an Irish castle that might at some time be required to defend its inhabitants from a somewhat restless, not to say lawless neighbourhood, yet gave one the impression of a lordly place, in which good cheer and hospitality might well prevail. Internally, instead of papered and panelled walls and gaudy upholsterers' decoration and drapery, we were charmed to find a spirit of true artistic design throughout decoration and furniture, the latter simply and carefully designed, not gaudy, not pseudo-Gothic, with all the vulgarity of stop-chamfering and bad carving such as the modern Gothic revival has done so much to bring forth, but thoroughly appropriate to the character of the building, and comparatively inexpensive. The decoration of the walls is throughout in a light tone of colour, giving a bright and cheerful appearance to all the rooms, in which the comparative smallness of the windows externally, at first sight, suggested the "dim, religious light." The general scheme of the decoration consists of various subjects from the "Fairy Queen," and the colours generally used are light reds, delicate greys, and terra vert, on a cream-white ground. The windows throughout are filled with plain square quarries below the transome, and above with delicately-painted circlets of stained glass, representing the seasons after Spenser, the various months with their representative planets, and other subjects. It is rare to see in these days a building so thoroughly carried out from top to bottom in all its arrangements, design, decoration, glass, and furniture, as this, and in such thorough harmony, and yet at the same time evidently at no very considerable cost. Throughout the building there is strict study, and regard to all things being convenient, useful, and appropriate; no striving after effect by heavy coarse carving, no gaudy decoration scattered all over the walls in ultra-mediæval and pre-Raphaelite coloring; but all is suitable and artistic, without being showy and expensive; and the architect, Mr. Godwin, may be thanked by all his brother artists for offering so strong a protest, such as this building does, against the present habit of people in high places setting an example to the outside public of treating an architect merely as a builder, and not as an artist, and considering that he should have no hand or thought in the after decoration of his work. Until this utter ignorance of the public, and especially of such men as the "First Commissioner," be rooted out, we may expect to see our public buildings entrusted to ignorant charlatans and gentlemen of no art experience or knowledge, and the beautiful work of our forefathers destroyed by modern vandalism and base ignorance. Let the public insist on an educated artist being employed in the public works, and that to him be given the control of the artists whose work must be necessarily subordinate to his building—then, and not till then, may we hope to see art buildings in which, as in olden days, the work of the painter and the sculptor shall be in keeping and in harmony with the work of the architect. We strongly recommend Dromore Castle to the study of the younger members of the profession, not simply as a building, for that would be but fulsome praise to Mr. Godwin, but to enforce upon them the absolute necessity of thinking out the whole of any work they may be called upon to design, carefully and conscientiously with reference to its general art finish, and of avoiding costliness and extravagance in vain striving after effect, in gaudy decoration, and vulgar pseudo-Gothic upholstering, which can only lead to the destruction of the art merit of their buildings, and the probable annoyance of their clients, whom they have thus led into foolish and useless and ofttimes ill-afforded extravagance. In Dromore Castle the art decorations have probably cost considerably less than the sum that would have been expended in a similar building by a client of less taste and less confidence in his adviser, in gaudy window curtains and flock and French papers, and the designed has certainly cost less than the usual upholsterer's furniture; we need scarcely say that the art comparison and effect is by no means flattering to the upholsterer or paper hanger. . . . .

Joining the Great Southern line again at Patrick's Well, a short journey brought us to Charleville, a place of no particular interest, but within a short hour's drive of which lies the once strongly fortified town of Kilmallock (ancient Cill Mocheallog, or the Church by St. Molach), which contains very much to interest the antiquary and the architect. This ancient city was in the reign of Edward III. entirely surrounded by strongly-fortified walls, and possessed four gates, two of which still remain; the fortifications and many of the old houses were damaged by frequent sieges, and were ultimately destroyed by order of that ruthless iconoclast Cromwell. There still remain some few of the ancient houses dating from about the middle of the sixteenth century. At the east end of the town, are the exceedingly interesting ruins of what is said to have been a Dominican Priory, but which, judging from its arrangements, was probably a Franciscan Friary, said to have been founded about the end of the thirteenth century, by one Gilbert, Lord of Offaley. The general arrangement consists of a church with early nave and choir, with a south aisle and transept of later date; over the crux is a small tower of late sixteenth century work, ill harmonising with the rest of the building. The choir has a very beautiful five-light thirteenth-century window containing much good and delicate detail: to the south, with entrance from the crux, is the cloister, the greater part of which still remains; on the east side of this is the early calefactory or friars' day-room, with dormitory over; and on the north the large kitchen, containing two very good early fireplaces: the refectory over this is of much later date than the other work, the kitchen and the remainder of the buildings being coeval with the church. Throughout these ruins, as well as the adjacent ruins of the old priory church of St. Peter and St. Paul, there is much beautiful detail and subject for careful study. . . . .

There are a few other small but interesting ruins in Kilmallock, and ample work to keep a student well and usefully occupied for two or three days. Returning to Charleville, we took train again, and after a brief tour through exceedingly pretty country, arrived at Killarney, that "ultima Thule" of the run of Irish tourists, all eager to see the exceeding great beauties of this charming place, the description of which has been so often written that even were not these architectural—not general—notes, words of ours would be but tame and superfluous. Here we inspected Pugin's cathedral (a not very beautiful example of this architect's work), and a new friary of poor design. At the entrance of the town is a new Protestant church just finished, from the designs of a Mr. Atkins, a carefully thought-out design, with some good detail, but thoroughly French in its general feeling, and giving one the idea that the architect had studied Mr. Burges's new cathedral at Cork rather than the ecclesiastical buildings of his own country, which, with all respect to the talented architect of the Cathedral of St. Fin Barr, we venture to think, patriotically speaking, a great mistake.

The ruins of Ross Castle, the ruins of the Priory Church of Muckross, the small ruins on the lovely island of Innisfallen, and the more extensive remains at Aghadoe, with its church and round tower, will amply repay visiting, and give an antiquarian zest to all the exceeding beautiful natural scenery around. . . . .

With a strong recommendation to architectural students to pay an early visit to a country so full of interesting antiquarian and architectural remains, the study and knowledge of which would be eminently more useful to them than *continually sketching foreign buildings*, and where the people are kind, civil, and hospitable in the extreme, we close these few brief notes of a short but pleasant sojourn in the sister isle.

ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND.

There will be an Ordinary General Meeting of the Institute, on this (Thursday) evening, at the Rooms Great Brunswick-street, when the Treasurer will read the statement of accounts for past session; and the programme for present session will be arranged.

MISCELLANEOUS.

It is understood that the Government have intimated to the conductors of the Glencree Reformatory their readiness to hand over the old gaol at Phillipstown, near Tullamore, as a supplemental establishment, the County Wicklow one being full, about 360 boys being now maintained there. It is stated that the occupation of the Phillipstown institution by Reformatory boys may be made remunerative by the quarrying and preparation of rubble stone, much used in Dublin for building purposes, the canal, which runs close to the place, affording a facile mode of transit. Some land will be attached to the premises.

The late Samuel Lover.—A beautiful tablet has been placed in St. Patrick's Cathedral, to the memory of the late Samuel Lover, bearing the following inscription:—"In memory of Samuel Lover, poet, painter, novelist, and composer, who in the exercise of a genius as distinguished in its versatility as in its power, illustrated so happily the characteristics of the peasantry of his country, that his name will ever be honourably identified with Ireland. He died July, 1868, aged 72, in the firm faith that, having been comforted by the rod and staff of his Heavenly Father, in approaching the dark valley of the shadow of death, he would be, through the tender mercy of his Saviour, gathered among the flock of the Good Shepherd."

Ceylon.—An archæological committee has been appointed in Ceylon to investigate the ruined sacred cities and to collect inscriptions. Several ancient cities have been cleared of jungle, and many unknown antiquities have come to light. Photographs have been taken of the ruins of Anuradhapura, showing the places where the Mahinda meditated and preached; the Bo tree, where Baddhaghosha recited his Visuddhimagga; and the Vihara, where he translated the commentary ont he Buddhist Scriptures. The discovery of new and very important ruins is announced. The Governor of Ceylon (Sir Hercules Robinson) encourages the undertaking.

Lead Poisoning.—We have received very important communications on this subject from two of our contributors: the first from Prof. F. Crace Calvert, of Manchester, who says:—"In our city great numbers of private houses have on the first floor a bath-room and lavatory, in which is a leaden cistern, supplying the hot water required. The contents of the cistern are heated by means of a continuous current of hot water, fed by a boiler placed behind the kitchen range on the ground floor The cooled water from the cistern returning to the boiler is of course charged with all the lead dissolved from it; and as the occupiers of these houses are either not aware of the action of water on lead, or do not reflect that the water which they take from the kitchen-range for domestic purposes has circulated through the cistern above, it is not surprising that many of them fall victims to lead poisoning." Professor Church, of the Royal Agricultural College at Cirencester, points to a similar danger, resulting from the use of gazogenes for preparing aërated waters. He says:—"I have examined a large number of different waters—English and foreign, old and new—and I find one defect universal. The upper part of the long glass tube (through which the aërated liquor is forced from the lower vessel) is fitted into a tube of pewter. The aërated water standing in this dissolves some of its lead; and the first wineglassful of water drawn each time that the apparatus has been left to itself, turns brown when tested with hydrosulphuric acid Why should not the new tin-lined lead tubes be used for the metal fitting, in which the little spring-piston of these machines works?"—*Food Journal.*

Danger from Union of Metals.—Some time ago, at the Institution of Engineers in Scotland, Mr. Clinkskill exhibited several pieces of boiler plates cut out of destroyed boilers for supplying houses with hot water; the boilers were used with Loch Katrine water. The action on the plates was evidently due to a more active agent than ordinary corrosion, the surface of the plates being irregularly honey-combed to a considerable depth. In the case referred to, the cistern was of lead, the boiler and connecting pipes of iron, thereby forming a galvanic battery, sufficient to account for the destruction of the plates. From the experience obtained, it appears advisable that in the construction of such hot-water apparatus, the cistern, boiler, and the connecting pipes, should all be of iron, or, at least, of one kind of material. —*Builder*.

Alarming Discovery at Wigan.—A short time since a somewhat extensive subsidence of earth took place in Wigan. Since then a mining engineer and a number of workmen have been engaged making investigations, which have resulted in the discovery that some of the principal streets of the town are, at only a few yards from the surface, undermined by old workings, very imperfectly propped. The Public Health Committee are, it is stated, taking steps with a view to ensuring the safety of the streets.

American enterprise is well exemplified in the determination of a number of Western railroad managers to establish handsome ticket-offices in London and other European cities, where may be procured tickets over any American railroad.

The *Times*, speaking of the last great Exhibition, says:—"Undenbtedly, however, the finest show of watches is made by Benson, who offered prizes for designs for watch cases at the South Kensington Museum, and who, by these means, has secured some of the most exquisite and ornamental designs for watches that are shown in the buildings." Since then greater improvements, both in the cases and movements, have been introduced by Mr. J. W. Benson, of Old Bond-street and Ludgate-hill, London. It may be fairly said that these watches are the perfection of mechanism and beauty. Illustrated pamphlets on Watches, Jewellery, Clocks, Chains, &c., forwarded by Mr. Benson, post free, on receipt of two stamps.

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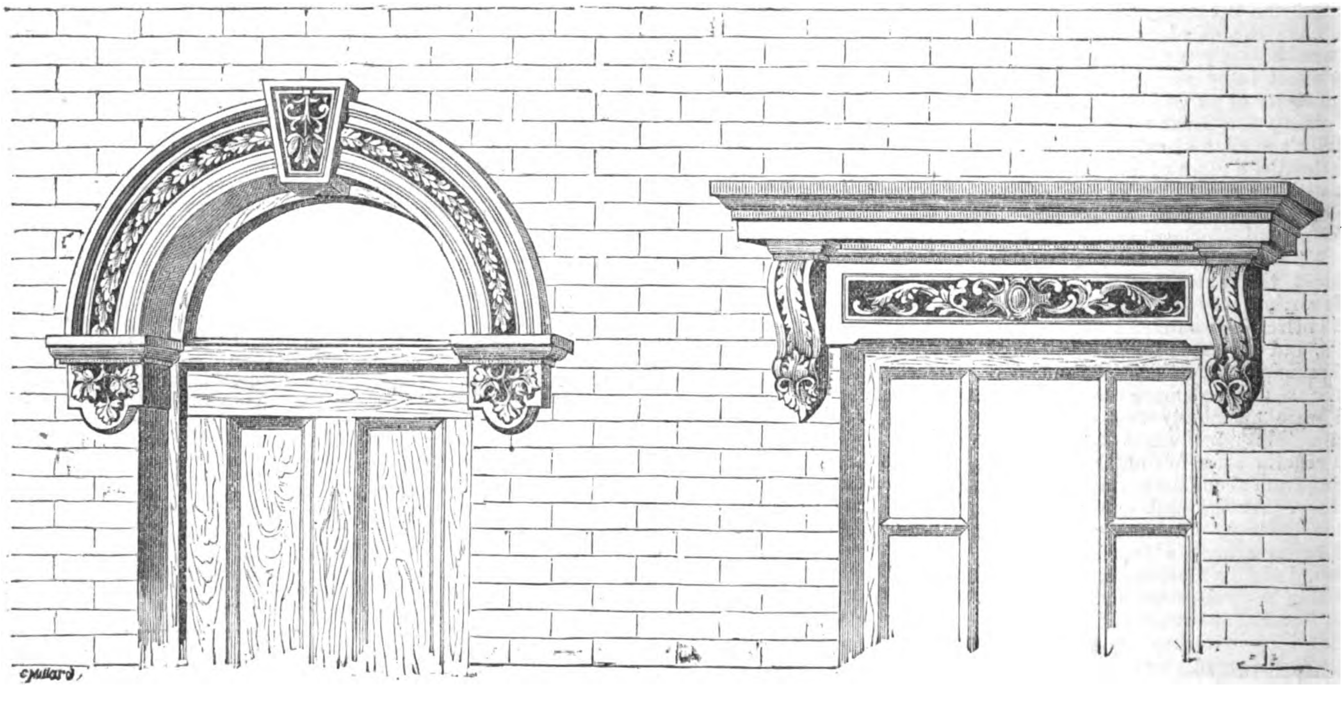

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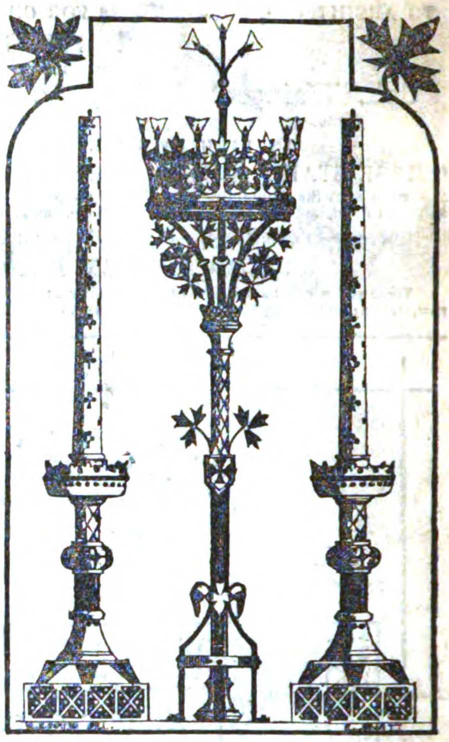

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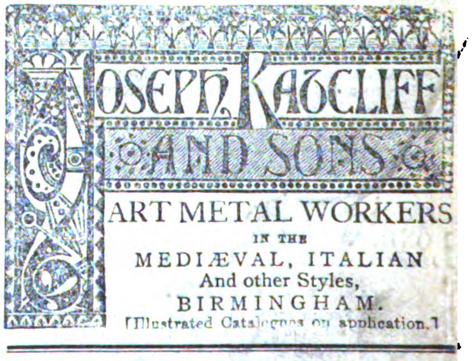

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